THE
PEDAGOGICAL SEMINARY
Founded and Edited by G. STANLEY HALL

VOL. XXII DECEMBER, 1914 No. 4

AN EXPERIMENT IN TYPEWRITING

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The psychological processes involved in typewriting have been studied experimentally by only a few persons, but they will probably be studied more widely in the near future. It is a splendid subject for investigation in experimental psychology; the learning processes in typewriting are very complex and probably involve all the elements and all the orders of habit formation.

1. *Aim.* The purpose of this investigation was to study the influence of: (1) practice; (2) different stimuli—visual, auditory, and audio-visual; (3) distribution of practice; and (4) secondary factors, such as momentary disposition, time of day, fatigue, concentration of attention, etc.

2. *Means and Method.* These experimental tests were individual in character and were taken by four subjects: the writer, Dr. E. L. Kuhnes, Miss Emma Stevens, who were students in New York University, and Dr. Paul Radosavljevich, Professor of Experimental Pedagogy in New York University, who are characterized in this work as subjects *B, K. S.,* and *R,* respectively. The period of time covered in this experiment by each subject is as follows: subject *B,* from Dec. 8th to April 8th; subject *K,* from Jan. 8th to April 7th; subject *S,* from Feb. 17th to April 3rd; and subject *R,* from Jan. 13th to Feb. 20th.

The Hammond No. 12 typewriter was used. This machine has a universal keyboard with but three rows of keys. All capitals, figures, and punctuations, except the period, comma,

semicolon, and hyphen, require the use of a shift key. This machine has shift keys on one side only which is a disadvantage in writing by the touch method.

The materials copied were letters, letter-groups, syllables, words, and sentences, prepared for the purpose; Stickney's *Word by Word Spelling Book,* pp. 232-236; the first chapter in Dewey's *How We Think;* certain articles in the *Kindergarten Review,* Feb., 1914; Cunningham's *Text-Book of Anatomy,* pp. 284-289; and seven articles, written by Dr. Robert MacDougall, which may be found in the following publications: Education, XXIV, 1904; The American Journal of Psychology, IX, 1903; The Journal of Abnormal Psychology, VI, 1911; and The Psychological Review, V, 1898; IX, 1902; and IX, 1912. The subjects had no previous experience, except *K* who had probably written fifty pages during 1912-1913. These tests consisted of both preliminary and real practice.

3. *Procedure.* The regular time for taking these experiments, for subjects *B* and *K* was from seven to eight o'clock in the morning, and from one to two o'clock in the afternoon. Very few changes in time were necessary and those made showed no special results. Subject *R,* who practiced in the sight method only, took the tests just as the opportunity presented itself, and they were quite irregular. His time was so fully occupied with his regular professional work and he was interrupted so often while doing the tests that he finally gave it up entirely before the practice had proceeded far enough to give much valuable data. Subject *S*'s regular time was half past three o'clock in the afternoon, but this time was varied and will be explained more fully later. Subject *S* took the touch method only, but subjects *B* and *K* took both sight and touch method practice. Subject *B*'s practice covered a total of one hundred twenty-one days; subject *K* practiced ninety days; subject *S* practiced thirty-two days covering a period of forty-five days; and subject *R* practiced about thirty days. The touch and the sight methods will be treated separately.

I. Sight Method

Preliminary Tests. Only two subjects, *B* and *R,* took the preliminary tests in the sight method; *K,* the other subject taking the sight method practice was already an amateur of some experience, and for that reason began these tests with the real experiments.

The preliminary tests consisted of an orientation or general observation of the machine and methods of operating it, and six copies which were written ten times each. The first copy

contained two hundred letters in non-alphabetic order; the second copy consisted of two hundred letters in two-letter groups; the third copy was of four-letter groups; the fourth contained six-letter groups (these groups did not contain syllables); the fifth was of words of one syllable; and the sixth had words of two syllables.

These preliminary tests were copied by visual stimuli, and in case of subject *B*, came at the regular practice time. The copy was written but once at a sitting by subject *B*. Subject *R* wrote these copies at irregular times and was not limited to a certain number at a sitting. He wrote the five series (having omitted the two-syllable word test) in seven days, from January 13th to January 19th inclusive.

In this experiment the stroke was selected as a unit by which to determine the rate of progress. All movements necessary for operating the machine were reduced to terms of strokes. Striking a letter without the use of the shift key counted one stroke, striking a letter when the shift was used for a capital or for punctuation counted two strokes, running the carriage back counted three strokes. This seems to be a fair evaluation for the several operations with the exception of the use of the shift key. This machine has shifts on but one side and to strike a capital on the other side of the machine, using the touch method, is very awkward and much care must be taken to avoid mistake. The use of the shift took more time than striking two keys without the shift but since the data have been kept and computed by this evaluation it will not be changed.

Each of the copies, that is, letters, groups of letters, and words, was written ten times. From the daily records of this work curves have been plotted; tables showing the average strokes per minute have been written, the mean variation of time, and the average errors for each series of ten tests have been made.

Real Experiments. Subjects *B*, *K*, and *R* took the real experiments. In these tests a new element was introduced, namely, a variation in the kind of stimuli. This variation obtained, however, only for subjects *B* and *K*.

The practice material was composed of three-letter syllables, words, and sentences. There was a series of ten tests in each of the above, and each test was repeated three times at a sitting, being presented to consciousness by three different stimuli or combination of stimuli. That is, the copy was written, first, from visual stimuli, secondly from auditory stimuli (one subject pronouncing or dictating for the other), and thirdly, visual and auditory stimuli combined (the subject

visualizing and pronouncing the copy and writing it at the same time).

In addition to this regular practice an examination test was taken every fifth day, that is, at the end of a ten test series. Subject *R* finished his series in more or less time than five days for each and, therefore, his examinations were not so regular.

The examination consisted in writing from visual stimuli: 1, Letters in mixed order; 2, Nonsense syllables consisting of two consonants and a vowel; 3, Words in confused order; and 4, Sentences. Each part of the examination contained one hundred letters. The examination was taken at the completion of each ten test series, and a new series was begun at the following practice period.

Subject *R* finished this part of the work by Feb. 1st, and began copying from connected discourse found in "Cunningham's *Text-Book on Anatomy,* pages 284 to 289, which was discontinued Feb. 20th. Subjects *B* and *K* also finished the six ten-test series and took up the touch method Jan. 22nd.

4. *Results—Preliminary Tests.* From the daily records of the several tests tables have been made and curves have been plotted. These curves and tables show graphically the results of the work and the progress from day to day.

The preliminary writing was very tedious, especially the letter writing. Much care was necessary to keep from losing the place on the copy when the eyes were called away to direct the writing; and sometimes much time was lost in trying to find the proper place again. If the subject made a special effort for speed he invariably made many errors. These errors were as follows: striking the wrong key, striking between keys, striking the space bar before a word was finished, inverting letters, striking letters of the corresponding position on the opposite side of the keyboard, and others of similar nature.

By referring to the table of subject *B* for sight writing it will be seen, from the general averages, which series was the easiest to write. It appears from the table that the single letter writing was the least efficient, and the two syllable word writing most efficient. It also appears that the four-letter groups could be written faster than either the two- or six-letter groups. This is due to the ease with which the groups of four letters could be held in memory while being tapped off on the keys.

In the case of *R* a difference is shown. He also made slowest progress in writing isolated letters, and his best record was shown in writing words. He took the letter groups in a different order to that of *B*'s practice. His record for the two-

letter groups is better than either the four- or six-letter groups. It was probably easier for him to get the copy of the two-letter groups than the others. But as some of these preliminary tests were finished by *R* in one day, a preferable showing in any group might have been due to some transient cause, and likewise the unfavorable showing of other groups.

Real Experiments. Three subjects took part in the sight method real experiments, namely, *B*, *K*, and *R*. Subjects *B* and *K* took this part of the experiment (writing syllables, words, and sentences) in three ways, according to different stimuli, that is, visual, auditory, and audio-visual which have been explained above.

Curves were drawn and tables were made which show clearly the results of each of the different stimuli used in the practice. By comparing the figures in the tables it is plainly seen that the larger the copy unit the higher the record was. That is, the sentence writing shows a better record than does the word or syllable writing.

In comparing the results of the types by stimuli it is found that in case of subject *B* the total average of syllable, word, and sentence writing for ten tests each, are as follows: Visual, 74.44 strokes per minute; auditory, 79.15; and audio-visual, 74.26. For subject *K* the averages are: Visual, 76.05; auditory, 72.10; and audio-visual, 81.25. These figures seem to show that *B*'s reaction-time for auditory stimuli was less than for either visual or audio-visual, while *K* was more alert to audio-visual stimuli. Subject *B* was least efficient in the third variety of stimuli. He apparently was obliged to wait till the letters, words, or sentence or parts of a sentence had been pronounced before the fingers could be placed effectively on the proper keys, whereas with the other kinds of stimuli he could begin writing at once while visualizing or getting the auditory stimuli for advance copy. Subject *K* did not have this difficulty and therefore made a better record.

Subject *R* took the same tests for visual stimuli but did not take the other two types. His results are practically in accord with those of subjects *B* and *K* for visual stimuli practice. He repeated the three series once, and his practice time covered eight days.

5. *Conclusion.* Much care is necessary for a beginner to keep from getting lost in the copy, especially is this true when copying single letters. For one to rush means an increase in errors, and at times a confusion which impairs the orientation of the keyboard. Copying single letters is much slower than copying larger units, and the sentence copy gives the best record of any units practiced in these tests.

In the case of subject *B*, practice in the real experiments was most efficient when reacting to auditory stimuli, while subject *K* was most efficient in reacting to audio-visual stimuli. All practice curves and examination curves, when for a reasonable length of practice, show a constant ascending tendency.

II. The Touch Method

Procedure—Preliminary Tests. Subjects *B*, *K*, and *S* took the touch method writing. Subjects *B* and *K* began Jan. 22, and *S* began Feb. 17, 1914. The material used in this method was of the same nature, and of equal difficulty as that used in the sight writing. A slight variation, however, occurred in the preliminary practice in regard to the technical form, namely, in the sight method simple letter groups formed a part of the copy material whereas three-letter syllables were used in writing by touch. Subjects *B* and *K* finished the full six ten-test series in the preliminary work but subject *S* took only three of them.

For all the subjects the work at the beginning was extremely slow. A piece of cardboard fastened to the nuts of the ribbon spools screened the keyboard from view. The subjects began by using certain keys, namely, "a" and ";" for references. They kept the little fingers of the left and right hands, respectively, on these keys and felt their way by counting the keys to the various other keys when needed.

The first task of importance was to learn the position of all the keys, and be able to keep a mental picture of the keyboard as a whole. With a chart of the keys, on the cardboard used to screen the keyboard, the subject could immediately locate any key; and by feeling the way from the keys remembered he could locate any other key desired. Subject *B* within three or four days had a clear visual memory of the whole keyboard. Subjects *K* and *S* used the chart much longer, possibly ten days or two weeks in all.

Real Experiments. The material for copy in the real experiments was the same as that used in the sight practice, that is, it was of the same degree of difficulty, and had the same characteristics. Also the same stimuli (visual, auditory, and audio-visual) were used by *B* and *K* as in the former method.

As soon as the preliminary tests were finished subject *S* began copying plain, simple articles in the *Kindergarten Review* for Feb., 1914. On account of bad weather, holidays, and vacation at the University (New York), and other unavoidable causes subject *S* had a number of interruptions in practice; and while the regular practice time was 3.30 P. M.

the time was varied in a few cases because of necessity. The subject ceased practice April the third.

The examination test was taken by subjects *B* and *K* as in the previous work, and though a different lot of copies, they were the same in all essentials, and were taken in the same way as in the sight method.

When subjects *B* and *K* finished writing the ten-test series (nine in all, *i. e.*, three for each kind of stimulus) they began copying articles, written by Dr. Robert MacDougall, which have already been mentioned. For this copy work a thirty-minute period, exceptions to which will be described later, was used; and as many strokes as possible were made during this time.

A fifteen-minute examination consisting of letter, word, and sentence writing was also carried. It was taken once each week. Letters were written for five minutes, words for five minutes, and sentences in connected discourse, for five minutes. For the letters and words Stickney's *Word by Word Spelling Book* was used; and for sentence writing the first chapters of Dewey's *How We Think* were used. This fifteen-minute period was deducted from the regular practice-period leaving but fifteen minutes for regular practice at examination periods. This copy practice lasted from Feb. 15th to April the 8th. A break in the machine caused a loss, in the practice of subjects *B* and *K*, of three periods on Mar. 8th and 9th.

4. *Results.* The results are, for some of this work, very interesting; while other portions follow the general characteristics of other general experiments of this nature. They are shown by curves and by tables compiled from the practice data.

Preliminary Tests. In the preliminary tests all subjects showed rapid gain in strokes per minute. Subject *S* in the first series of tests had an average of 16.66, which was nearly doubled in the second, and for the third the average was 36.9 strokes per minute. Subject *B* began with an average of 15.60 for the first series, and reached an average of 47.31 strokes per minute in the sixth or last series. Subject *K*'s average for the first series was 61.66 strokes per minute. Whether or not this increase in strokes over the other subjects was due to his previous practice the year before in sight writing cannot be determined.

There was rapid improvement at first because some of the simplest movements and associations were readily learned; and as many superfluous movements were, by more and more

direct associations, eliminated, the process of writing cleared up and speed increased.

Real Experiments. In the real experiments the results show continuous gains for all subjects. Subjects *B* and *K* took the syllable, word, and sentence series for the three forms of stimuli described above, while subject *S* began at once copying connected discourse by visual stimuli only. Subject *B* reached the highest number of strokes writing from visual stimuli, and the lowest number writing from auditory stimuli; subject *K* did the best work, in this case as in sight writing, with audio-visual stimuli and the poorest with auditory stimuli. Subject *B*'s best record in sight writing was with auditory stimuli, but in touch writing it swung over to the visual.

The subjects realized soon after beginning these tests that certain words were becoming easier and easier to write until it took very little conscious effort to write them. This was evidence that the higher order habits above the letter stage were forming; nevertheless many useless movements continued to be present. Some of these movements were: moving the fingers from a key just used before knowing where it would next be needed, and rendering it necessary at times to re-locate the same key before using any other key. Another source of superfluous movements consisted in involuntary nervous impulses which terminated in striking a key a second time or striking some other key while passing the fingers from one key to another. The subject seemed to have no control over these movements, they just "did it themselves."

In subject *S*'s practice of copying connected discourse progress was continuous except a few times when the record was pushed beyond the point that the subject was prepared to hold. In these cases only a few practices were necessary to put the record back at the maximum and a new leap was taken. The practice began March the 10th with an average of 36.6 strokes per minute and ended April the 3rd with an average of 59.33 strokes. During this period of 24 days, however, only 16 practices of thirty minutes each were taken. In a few instances the practice was moved up from 3.30 P. M. to 2.30 P. M., and one time up to 10.20 A. M., but as nothing occurred contrary to the results of the regular practice time no exceptions are made. By referring to the table showing the results of subject *S* it will be seen that the per cent. of error is extremely low, ranging, with one exception, from .27 to 2.77.

Subject *B* and subject *K* in copying connected discourse, thirty minutes twice a day, made steady progress as may be seen by referring to the curves and tables showing the results of the series of practices. This copying of connected dis-

course extended over a period of fifty-two days. Beginning March 31 subject *B* devoted four days to writing twenty minutes at a time three times a day, the third period coming between ten and eleven o'clock of evenings. And for the five remaining days of the practice the subject wrote for one hour using but one period a day. These variations were made to test the effects of distribution of practice, and the time of day. The table of subject *B*'s work for these days of three periods of practice each shows that with one exception the last practice gave lower results than the first practice, and in only one case is the second period record higher or as high as the first. Taking an average of the first, second, and third periods we have the following: first period, 122.98; second period, 118.86; and third period, 114.08 strokes per minute. This seems to show that for subject *B* the best period is seven to eight o'clock in the morning, the second best between one and two in the afternoon, and third, or least efficient period between ten and eleven in the evening. This may be only suggestive because of the few trials used; but coming as they do at the end of a long series of tests these trials appear to the writer to be significant. Subject *K* took the three twenty-minute tests only on April the first and third, and the one hour test on the four following days. The averages for the three-tests a day periods are as follows: first period, 126.32; second, 135.57; and third, 124.30. This record also shows the least efficient practice done at the evening sittings, but contrary to subject *B*'s record, the best record was made at the afternoon periods. Subject *B*'s one hour practices gave poorer results than the morning practice of the three-a-day twenty-minute periods. In the case of five one-hour a day practices an average shows 121.51 strokes per minute which is better than either the afternoon or evening twenty minute practice, and is a close second to the morning record for the shorter tests. But subject *K*'s one hour practice gave poorer results than any one of the three-a-day periods.

In many cases the result of the morning practice was not as good as it should be on account of practicing with numb hands. The subjects often came in from a walk in the cold wind and before realizing that the hands were numb began the practice. This numbness caused slowness in action and an increase in the per cent. of error.

The material for the connected discourse writing was all written by the same author as mentioned above; therefore, it was practically homogenous in nature. But one of the articles was in finer print (being a reprint) than the others and for that reason was slightly more difficult. This is

shown by the drop in the record on March 5th for subject *K*, and March 6th for subject *B*, which drop required some four or five practices to overcome.

A break in the machine on March 8th caused a loss of three practices. With both subjects the practices following the break showed improvement over the last practices before the break. And this rise was permanent with subject *K*, and also with subject *B* with few exceptions.

Whenever attention could not be concentrated, for any reason, the record was lowered and errors increased. Any momentary indisposition seemed to affect the mental processes necessary for learning typewriting. As these processes are very complex and of a high mental order any condition which lowered mental vigor decreased the ability for progress in this activity.

Some days the writing went easily, associations came with apparently little effort and the process seemed agreeable and pleasant. At other times progress was made only through grim determination and special effort which many times also resulted in a marked increase in error. At times it appeared to the writer that try as he might progress was slow. It seemed that determination was at high tide but the fingers would not work smoothly and rapidly. This coincides with Book's findings in similar work: "It is not what the learner would like to do that determines his rate of progress in learning, but what his mental and physical conditions at the time will let him do." [1]

Great concentration must be had at first, and so many different elements connected with the writing demand the attention at the same time that it is difficult for all to be attended and to make equal progress simultaneously; therefore letter, word, and phrase associations are always forming, and other minor details are being perfected very unevenly, but nevertheless constantly.

The effect of practice in this series of experiments on the typewriter is obvious. The tables show, with the constant natural variations, an increasing tendency.

The thirty-minute period twice a day proved to be the most economical distribution in this series of experiments.

It is very interesting to study the increase in per cent. for sixteen consecutive practices of each of the touch method subjects. Subject *S* took one thirty minute practice per day, in copying connected discourse for sixteen days; the sixteen practices on account of breaks in the daily practice covered

[1] W. F. Book, The Psychology of Skill . . . in Typewriting. *Univ. of Montana Studies in Psychology*, 1908, I, pp. 5-188.

a period of twenty-four days, while subject *B* and subject *K* took two thirty minute periods per day without any loss, save three periods, for 53 days. The per cent of gain for subject *S* during the sixteen practices was 62; that for subject *K* for the same time (two periods a day for 8 days) was 75.5; and that for subject *B* for the same number of practices was 84. Curves X and Y will show the results of the entire connected discourse practice and the seventh day examinations during this practice for subjects *B* and *K*. There is also a curve showing the progress in practice for subject *S*. In curves Y for subjects *B* and *K* the letter, word, and sentence copying is indicated by (a), (b), and (c) respectively.

No extended plateaus occurred in the experiments except for subject *K*. He had two rather lengthy delays, one of which lasted twenty days, the other had been in evidence ten days when the experiment closed. In case of the first of these plateaus there was probably on the whole a slight gain, but in the second instead of a gain there was a distinct loss. If time had allowed, it would have been of much interest to continue the experiment long enough to see what the result of this plateau would be. The first one came after fifteen days of copying in this part of the work, and the second one came after the fortieth day. These delays for subjects *B* and *S* were for but three or four days and seemed to be only the time required to bring the average rate up to a previous leap in the practice.

III. Conclusion

Writing by touch is very slow and discouraging at first; but the learner soon becomes familiar with certain keys and with certain associations, and the practice becomes interesting.

There are many minor details as well as the more important mental processes to be attended to continuously and simultaneously which make the learning process highly complex.

Habits of all orders make progress simultaneously, some in less, some in greater degree, and occasionally there seems to be an interchange of rates among the different orders in regard to development. That is, sometimes the lower order usurps the place of a higher order and thus reduces the writing to a slower and cruder type. But this falling back in progress of the higher-order habits is not for a long period; it soon gains the ascendency again.

Progress is not characterized by a smooth curve, but rather by a very irregular one; at times the subject leaps forward beyond the point which his efficiency can maintain, then a drop occurs, followed by constant gain till the maximum is

again reached; and then another leap is taken. This zigzag progress seems to be the natural order of the learning process.

The curves show conclusively that the subject makes the least gain in writing from letter copy, and the greatest gain in writing from connected discourse.

Probably the best time of day for such work as typewriting is not the same for all individuals; but these experiments show that work late in the evening is not so efficient as that done earlier in the day.

Long practice periods are not so successful as short ones repeated oftener.

Learning to typewrite consists of very complex mental processes which necessitate absolute concentration of the attention.

The key to success in this activity is good mental and physical condition and an agreeable attitude towards the work.

Under proper conditions practice will produce results in mental associations and manual dexterity far beyond what would ordinarily be anticipated.

TABLE I

SUBJECT B. SIGHT METHOD

The table shows the average number of strokes per minute, the mean variation in time, the average error, and the kind of material written.

Date	*Strokes*	*M. V.*	*Error*	*Material*
PRELIMINARY TESTS				
Dec. 8–12	35.80	.50	1.7	Single letters
" 13–17	38.05	.31	3.6	Two-letter groups
" 18–22	41.60	.29	2.3	Four-letter groups
" 23–27	38.67	.45	3.3	Six-letter groups
" 28–Jan. 1	56.25	.20	3.3	One-syllable words
Jan. 2– 6	64.77	.16	3.5	Two-syllable words
REAL EXPERIMENTS				
Visual Stimuli				
Jan. 7–11	57.66	.35	2.2	Single syllables
" 12–16	81.15	.13	0.8	Single words
" 17–21	84.53	.16	1.4	Words in sentences
Auditory Stimuli				
Jan. 7–11	60.00	.33	4.9	Single syllables
" 12–16	82.44	.18	1.5	Single words
" 17–21	95.03	.14	0.7	Words in sentences
Audio-visual Stimuli				
Jan. 7–11	54.76	.20	1.1	Single syllables
" 12–16	79.09	.20	1.2	Single words
" 17–21	88.95	.10	4.5	Words in sentences

TABLE II—*Continued*

SUBJECT B. SIGHT METHOD

This table shows the progress of writing letters, nonsense syllables, single words, and sentences, and represents examination tests taken at the end of each ten test series of the experiment. The average strokes per minute, the error, and the mean variation of strokes are shown.

Date	*Letters* *Strokes*	*Error*	*Syllables* *Strokes*	*Error*	*Words* *Strokes*	*Error*	*Sentences* *Strokes*	*Error*
Jan. 7	41.08	1	84.80	4	51.50	1	65.82	3
" 12	41.94	1	46.08		58.88		69.12	
" 17	44.44		51.73	1	66.66	8	72.53	1
" 22	42.40	1	53.80	1	65.34		74.40	2
M. V.	.98		12.84		5.40		3.00	

TABLE III

SUBJECT B. TOUCH METHOD

PRELIMINARY TESTS

Date	*Strokes*	(*Time*) *M. V.*	*Average Error*	*Material Written*
Jan. 22–24	15.60	4.14	25.5	Single letters
" 25	33.05	.88	4.6	Single syllables
" 26–27	36.03	.50	6.1	Two syllables
" 28	46.09	.33	10.1	Three syllables
" 29–30	46.77	.45	13.7	Words of one syllable
" 30–31	47.31	.28	3.8	Words of two syllables
REAL EXPERIMENTS				
Visual Stimuli				
Jan. 31–Feb. 5	63.72	.29	7.9	Single letters
Feb. 5– 9	60.94	.13	11.6	Single words
" 9–14	71.91	.18	7.7	Words in sentences
Auditory Stimuli				
Jan. 31–Feb. 5	51.42	.32	9.2	Single syllables
Feb. 5– 9	58.39	.17	11.6	Single words
" 9–14	72.34	.18	66.0	Words in sentences
Audio-visual Stimuli				
Jan. 31–Feb. 5	60.13	.36	6.2	Single syllables
Feb. 5– 9	64.47	.20	6.2	Single words
" 9–14	72.34	.11	5.8	Words in sentences

TABLE III—*Continued*

EXAMINATION

Date	*Letters* *Strokes*	*Error*	*Syllables* *Strokes*	*Error*	*Words* *Strokes*	*Error*	*Sentences* *Strokes*	*Error*
Jan. 31	50.00	20	46.15	8	43.84	16	49.13	2
Feb. 5	58.11	14	50.64	14	42.50	16	52.36	9
" 9	58.55	2	60.93	2	61.80	1	57.36	4
" 14	56.20	2	74.21		70.44	11	73.85	4
M. V.	2.86		9.58		13.97		7.43	
Gain in %	.124		.608		.606		.503	

TABLE IV

SUBJECT B. TOUCH METHOD

This table shows the results of copying connected discourse
* Material changed to finer print. † Break in the machine.

Date	*Strokes*	*% of error*	*Date*	*Strokes*	*% of error*
Feb. 15	49.60	1.81	Mar. 4	91.76	1.66
" 15	43.43	1.07	" 4	88.50	1.09
" 16	52.3	0.15	" 5	102.56	2.17
" 16	60.63	0.98	" 5	104.00	1.74
" 17	54.50	1.89	" 6*	90.65	1.62
" 17	54.06	2.15	" 6	95.16	1.99
" 18	59.00	1.48	" 7	90.63	1.21
" 18	58.76	1.90	" 7	94.69	1.00
" 19	65.43	2.64	" 8	98.77	1.92
" 19	59.26	1.67	" 8	†	
" 20	67.03	1.74	" 9	†	
" 20	68.63	1.21	" 9	†	
" 21	66.03	2.17	" 10	107.73	1.55
" 21	66.13	1.71	" 10	101.08	1.74
" 22	74.26	2.06	" 11	107.03	1.45
" 22	71.10	1.07	" 11	102.80	1.38
" 23	70.03	0.66	" 12	106.10	1.82
" 23	71.83	1.50	" 12	96.76	1.78
" 24	79.66	1.92	" 13	107.00	2.02
" 24	77.06	1.95	" 13	105.13	1.42
" 25	79.76	2.08	" 14*	109.64	3.01
" 25	75.66	1.14	" 14	103.00	0.81
" 26	83.56	1.83	" 15	106.80	1.54
" 26	81.76	1.43	" 15	107.80	1.51
" 27	88.00	1.47	" 16	107.70	1.55
" 27	83.20	1.24	" 16	110.80	1.50
" 28	77.66	1.09	" 17	111.87	1.48
" 28	87.76	1.25	" 17	106.00	1.40
Mar. 1	89.76	1.30	" 18	110.26	1.96
" 1	93.50	1.21	" 18	106.16	1.56
" 2	92.26	1.26	" 19	106.50	2.31
" 2	92.20	1.52	" 19	107.33	1.74
" 3	90.60	1.51	" 20	108.06	1.85
" 3	90.06	1.18	" 20	113.84	2.25

TABLE IV—*Continued*

Date	*Strokes*	*% of error*	*Date*	*Strokes*	*% of error*
Mar. 21	107.05	1.80	Mar. 30	108.53	2.15
" 21	106.20	2.10	" 31	118.85	2.47
" 22	102.20	1.81	" 31	117.65	3.27
" 22	110.52	2.32	" 31	102.85	3.06
" 23	108.80	2.25	Apr. 1	128.00	2.83
" 23	105.82	1.73	" 1	136.05	3.53
" 24	110.53	2.20	" 1	113.57	2.26
" 24	109.10	1.48	" 2	113.00	2.93
" 25	114.80	2.26	" 2	110.71	2.13
" 25	115.90	2.83	" 2	122.48	2.43
" 26	127.60	2.11	" 3	132.48	3.72
" 26	120.06	2.60	" 3	111.05	3.26
" 27	119.00	2.12	" 3	117.34	2.53
" 27	119.60	2.20	" 4	117.76	3.25
" 28	119.15	2.38	" 5	122.86	2.46
" 28	121.96	1.91	" 6	119.54	2.30
" 29	126.06	2.70	" 7	121.40	1.86
" 29	123.79	2.38	" 8	126.00	1.73
" 30	122.66	3.37			

TABLE V

EXAMINATION IN THE TOUCH METHOD

	Letters		*Words*		*Sentences*	
Date	*Strokes*	*% Error*	*Strokes*	*% Error*	*Strokes*	*% Error*
Feb. 22	58.6	0.00	45.4	0.81	66.0	8.80
Mar. 1	72.6	0.82	84.0	2.30	80.0	2.50
" 8	76.8	1.60	79.4	0.75	127.2	1.57
" 15	60.0	2.60	86.6	0.18	114.0	0.37
" 22	73.6	0.81	88.8	1.35	106.0	1.88
" 29	67.46	2.07	87.4	2.60	127.8	3.75
Apr. 5	79.6	2.51	107.8	2.77	112.9	2.53

TABLE VI

SUBJECT K. SIGHT METHOD

REAL EXPERIMENTS

Visual Stimuli

Date	*Strokes*	*(Time) M. V.*	*Average error*	*Material Written*
Jan. 8–11	52.66	.61	2.0	Single letters
" 12–16	83.90	.20	1.7	Single words
" 17–21	91.61	.21	1.2	Sentences

TABLE VI—*Continued*

Auditory Stimuli

Jan. 8–11	49.37	.62	5.7	Single letters
" 12–16	81.45	.24	2.2	Single words
" 17–21	105.5	.14	1.1	Sentences

Audio-visual Stimuli

Jan. 8–11	56.43	.43	1.7	Single letters
" 12–16	92.9	.18	0.4	Single words
" 17–21	94.44	.15	3.2	Sentences

TOUCH METHOD

PRELIMINARY TESTS

Visual Stimuli

Jan. 22–24	19.37	.14	27.9	Single letters
" 25	35.38	.94	18.8	Single syllables
" 26–27	29.81	.67	16.3	Two-syllable groups
" 28	47.39	.38	8.5	Three-syllable groups
" 29–30	67.81	.40	13.3	Words of one syllable
" 31	61.66	.43	7.6	Words of two syllables

REAL EXPERIMENTS

Visual Stimuli

Jan. 31–Feb. 4	86.20	.25	5.9	Single syllables
Feb. 5– 9	83.08	.11	8.3	Single words
" 9–14	89.41	.11	5.6	Sentences

Auditory Stimuli

Jan. 31–Feb. 4	71.42	.17	12.0	Single syllables
Feb. 5– 9	74.80	.14	6.8	Single words
" 9–14	88.48	.09	6.8	Sentences

Audio-visual Stimuli

Jan. 31–Feb. 4	86.95	.23	6.8	Single syllables
Feb. 5– 9	86.52	.07	6.5	Single words
" 9–14	88.31	.09	5.8	Sentences

TABLE VII

SUBJECT K. EXAMINATIONS

Sight Method

Date	Letters		Syllables		Words		Sentences	
	Strokes	Av. error	Strokes	Av. error	Strokes	Av. error	Strokes	Av. error
Jan. 12	40.6	4	54.0	1	81.2	1	68.6	0
" 17	47.7	3	56.8	3	72.3	0	80.8	0
Touch Method								
Jan. 22	46.8	5	61.3	4	80.4	1	80.9	2
" 31	58.1	6	74.1	6	61.9	11	66.4	3
Feb. 5	66.5	14	77.8	15	75.3	9	77.4	24
" 9	74.0	4	89.5	7	87.5	14	87.5	16
" 14	75.1	6	89.6	9	88.7	7	84.2	6
M. V.	7.2	2.8	8.4	3	8.1	4	5.9	7.8

TABLE VIII

SUBJECT K. TOUCH METHOD

Copying Connected Discourse

Date	Strokes per min.	% of error	Date	Strokes per min.	% of error
Feb. 15	49.80	0.54	Feb. 27	107.53	1.30
" 15	57.83	1.44	" 28	100.09	1.25
" 16	56.63	1.06	" 28	98.56	1.86
" 16	62.76	1.64	Mar. 1	104.56	2.27
" 17	64.96	1.33	" 1	113.60	0.99
" 17	70.73	3.66	" 2	103.84	1.39
" 18	72.74	2.22	" 2	108.50	2.23
" 18	73.13	2.19	" 3	111.93	1.19
" 19	65.96	3.43	" 3	108.37	0.98
" 19	72.46	1.46	" 4	116.16	1.04
" 20	65.33	0.81	" 4	103.63	1.59
" 20	65.99	1.44	" 5	111.86	1.69
" 21	77.56	2.06	" 5	105.96	2.26
" 21	75.73	1.41	" 6	110.90	1.32
" 22	87.46	1.83	" 6	105.03	1.21
" 22	80.73	2.33	" 7	105.96	1.69
" 23	65.56	1.37	" 7	96.01	0.97
" 23	82.66	3.31	" 8	109.43	2.10
" 24	87.66	1.10	" 8	†	
" 24	87.90	0.98	" 9	†	
" 25	86.93	1.56	" 9	†	
" 25	95.03	1.15	" 10	110.53	1.37
" 26	99.83	1.13	" 10	108.33	1.44
" 26	95.96	1.57	" 11	119.33	1.28
" 27	93.73	1.03	" 11	114.36	2.12

† Break in the machine.

TABLE VIII — *Continued*

Date	*Strokes per cent.*	*% of error*	*Date*	*Strokes per min.*	*% of error*
Mar. 12	111.86	0.98	Mar. 25	133.66	1.82
" 12	99.76	1.59	" 25	143.33	1.18
" 13	109.43	1.65	" 26	150.46	2.17
" 13	103.63	1.48	" 26	136.66	2.33
" 14	114.23	1.69	" 27	144.26	1.08
" 14	97.26	1.29	" 27	133.66	1.82
" 15	122.83	1.58	" 28	138.13	1.85
" 15	112.33	3.49	" 28	134.40	2.70
" 16	128.26	1.61	" 29	138.13	2.17
" 16	121.43	1.51	" 29	147.66	0.98
" 17	108.06	2.15	" 30	138.53	3.96
" 17	117.60	1.30	" 30	139.06	2.15
" 18	118.87	1.93	" 31	130.00	2.57
" 18	139.36	1.31	" 31	133.20	2.73
" 19	127.00	1.45	Apr. 1	137.25	2.84
" 19	106.53	1.68	" 1	137.25	2.41
" 20	111.03	2.26	" 1	133.20	2.02
" 20	104.30	1.85	" 2	145.00	1.89
" 21	111.56	1.31	" 2	130.20	2.34
" 21	98.26	1.93	" 3	115.40	2.29
" 22	135.31	1.95	" 3	115.40	1.31
" 22	119.83	2.25	" 3	133.90	2.54
" 23	146.62	2.62	" 4	122.10	2.48
" 23	126.56	2.23	" 5	122.10	1.67
" 24	138.83	1.89	" 6	132.05	2.52
" 24	145.53	2.91	" 7	130.31	2.14

TABLE IX

EXAMINATION

SUBJECT K

	Letters		*Words*		*Sentences*	
Date	*Strokes*	*% of error*	*Strokes*	*% of error*	*Strokes*	*% of error*
Feb. 22	56.6	2.22	55.0	3.02	82.4	2.52
Mar. 1	70.0	3.06	92.4	2.16	124.0	3.31
" 8	84.7	2.98	106.4	2.25	127.0	1.40
" 15	92.2	2.52	113.6	2.81	113.6	2.46
" 22	98.0	2.46	129.8	2.00	120.0	1.58
" 29	71.0	2.28	105.0	11.11	150.5	3.58
Apr. 5	79.6	2.70	152.6	3.31	119.8	1.50

† Practices missed.

TABLE X

SUBJECT R. SIGHT METHOD

PRELIMINARY TESTS

Date	*Average strokes*	*(Time) M. V.*	*Average error*	*Material written*
Jan. 13–14	25.75	2.00	5.2	Single letters
" 14–15	35.08	0.96	7.2	Six-letter groups
" 16	45.63	0.70	8.7	Two-letter groups
" 17	41.81	0.50	6.8	Four-letter groups
" 19	53.33	0.60	5.7	One-syllable words

REAL EXPERIMENTS

Jan. 20–21	46.15	0.18	0.9	Syllables
" 20–21	48.00	0.50	1.9	Words
" 20–21	52.40	0.42	3.5	Sentences
" 23–28	67.66	0.45	3.2	Syllables
" 23–28	84.00	0.00	0.66	Words
" 23–28	74.28	0.46	2.6	Sentences

CONNECTED DISCOURSE

Copying from Cunningham's "Text-book of Anatomy"

Feb. 2	41.08	*% Error*	.81
" 3	42.75	"	1.43
" 5	40.24	"	1.31
" 6	48.36	"	.56
" 10	42.00	"	.58
" 13	54.07	"	1.10
" 18	39.60	"	1.01
M. V.	4.10	"	.28

EXAMINATIONS

	Letters		*Words*		*Sentences*	
Date	*Strokes*	*Error*	*Strokes*	*Error*	*Strokes*	*Error*
Jan. 20	51.33	1	39.00	0	56.00	0
" 22	34.30	1	58.00	0	56.00	0
" 28	51.50	1	58.50	0	56.00	0
Feb. 20	79.50	1	78.66	0	74.66	0
M. V.	12.66		10.04		7.02	

TABLE XI

SUBJECT S. TOUCH METHOD

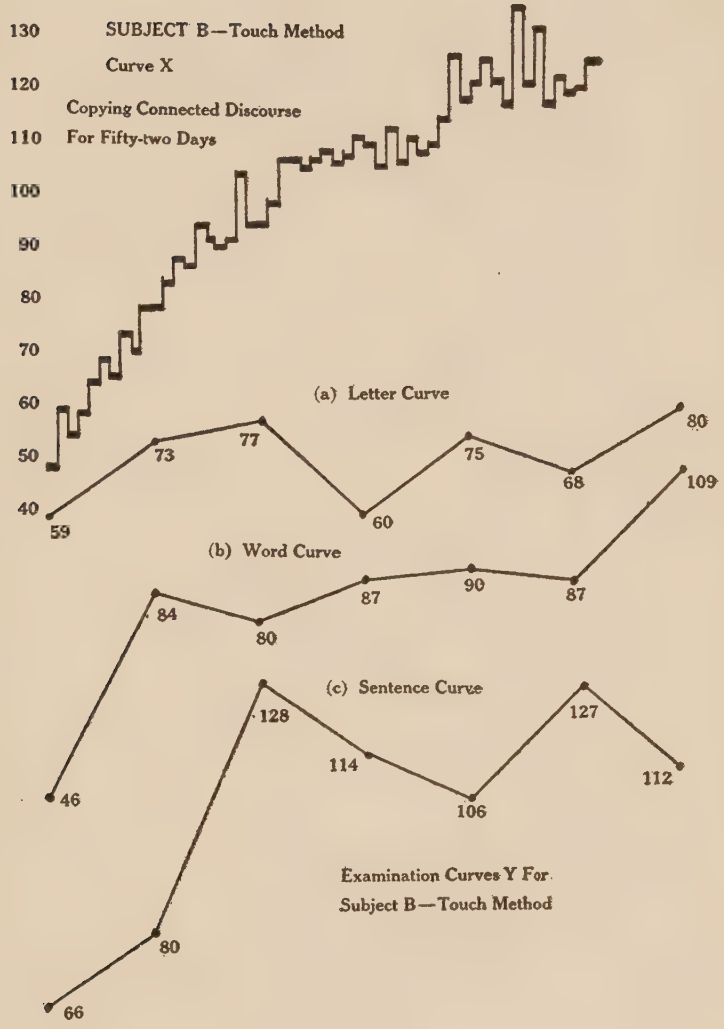
PRELIMINARY TESTS

Date	*Strokes per min.*	*Strokes M. V.*	*% of error*	*Material written*
Feb. 17–20	16.66	2.2	4.4	Single letters
" 21–28	31.57	5.3	1.8	One-syllable words
Mar. 4– 7	36.90	2.8	2.7	Two-syllable words

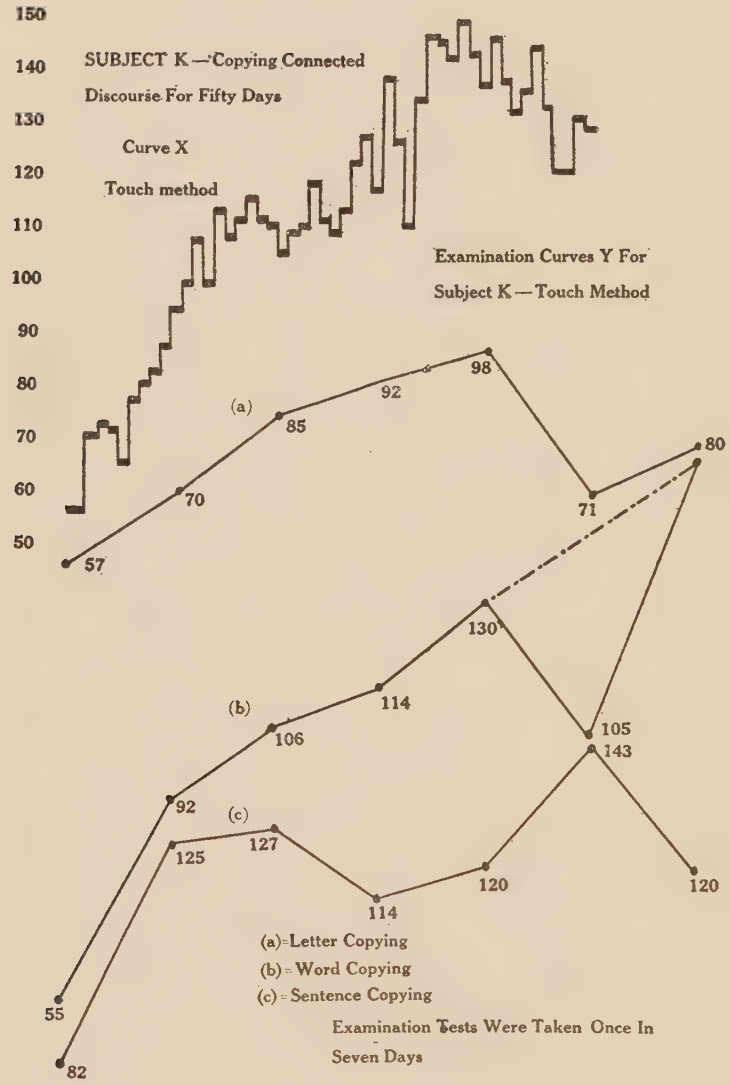
REAL EXPERIMENTS

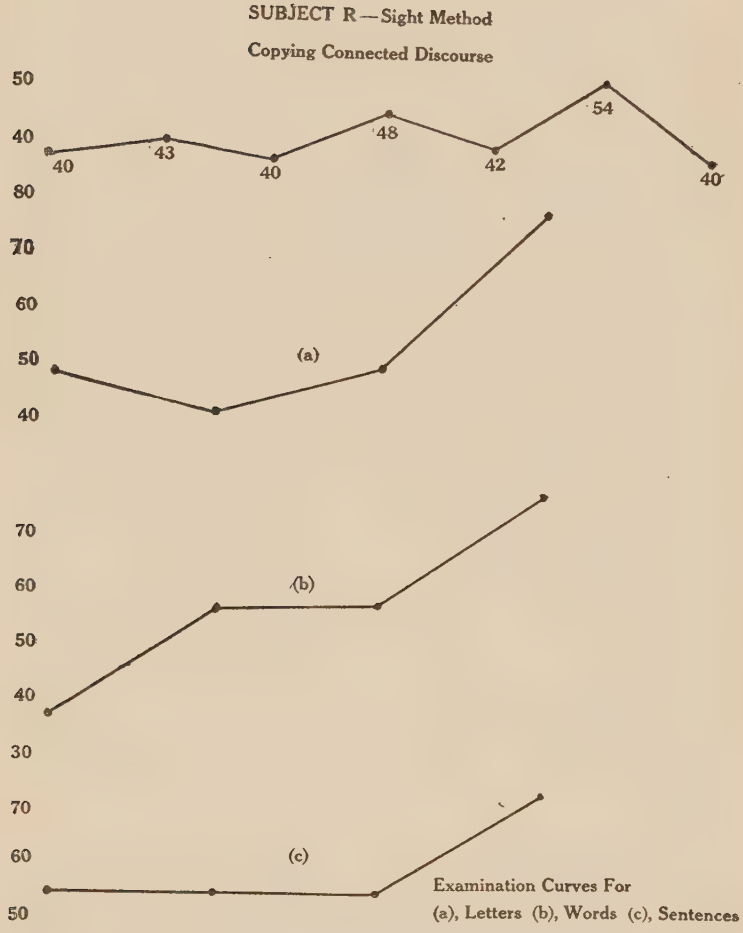
Connected discourse

Date	*Strokes per min.*	*% of error*	*Date*	*Strokes per min.*	*% of error*
Mar. 10	36.6	2.54	Mar. 24	45.0	1.48
" 11	34.9	9.35	" 25	47.0	1.48
" 16	44.3	0.98	" 26	54.8	0.61
" 17	33.43	2.49	" 27	48.73	0.27
" 18	35.25	2.36	" 31	46.41	2.37
" 19	36.1	2.77	Apr. 1	49.43	0.61
" 20	39.4	0.76	" 2	58.66	0.52
" 23	45.2	2.73	" 3	59.33	0.51



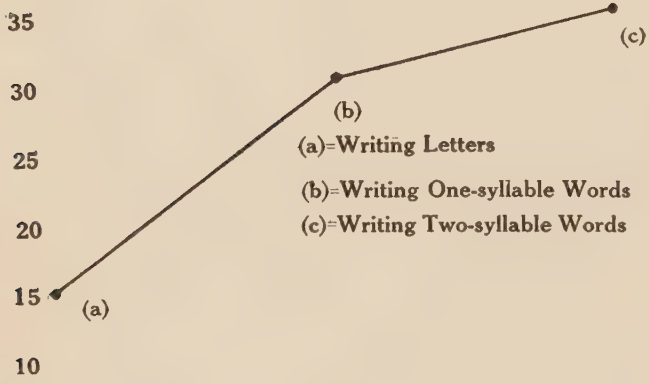
Examination Curves Y For
Subject B—Touch Method


150
140
130
120
110
100
90
80
70
60
50
SUBJECT K—Copying Connected Discourse For Fifty Days
Curve X
Touch method
Examination Curves Y For Subject K—Touch Method
(a)
57
70
85
92
98
71
80
(b)
106
114
130
105
143
(c)
55
92
125
127
114
120
120
82
(a)=Letter Copying
(b)=Word Copying
(c)=Sentence Copying
Examination Tests Were Taken Once In Seven Days



Examination Curves For
(a), Letters (b), Words (c), Sentences

SUBJECT S — Touch Method



Curve For Copying Connected Discourse

THE NAMING OF COLORS BY CHILDREN THE BINET TEST

By W. G. Bateman, University of Montana

Introduction

While writing a series of papers dealing with the language development of two children it became desirable to compare their progress in naming colors with that made by other children. From the evidence collected it was difficult to draw any conclusions as to what constituted normality in this direction. First, from the published vocabularies of children under six years of age or from notes concerning development in general, it appeared that small children learned color names rather easily. On the other hand from several investigations on large groups of somewhat older children, chiefly foreign, it was concluded that they were late in acquiring this ability. From the last evidence Binet and Simon in their tests for intelligence decided that the correct naming of the four important colors, red, blue, green, yellow, was a good test for the eighth year. Later, somewhat dissatisfied with this, they placed it in the seventh year. To Bobertag this seemed not so good as before, so he restored it to the eighth year. In America, however, Terman and Childs found this entirely too easy for children of this age level and in their tentative revision of the Binet scale transferred the test to the fifth year. With the hope of adding more evidence to that already accumulated which might help to decide the above points the examination of 600 school children of Missoula, Montana, was undertaken.

Historical

The earliest use of a color term, at least for English speaking children, was noted by Shinn (27) who observed her niece to use red at 16 months. Almost as early Bohn's child (9) used green and yellow, at 17 months, while Pelsma (22) noticed the first employment of a color name, blue, one month later. The usual date, however, seems to be after the twentieth month and is most frequently stated to be the twenty-second. Gale (13) found pink used first at 23 months; Moore (21) red about the same time; Tilley (Shinn 28) blue in one case and red in another at 22; Bateman (1-2) pink at

21 and 22 months respectively. In some cases white and black are perceived before this, in one instance, Hall (16), black being named as early as the thirteenth month.

Sanford (26) found a child at 21 months to use but one such term and that white, while another child at this age used no color names at all. In contrast to this Miss Shinn's niece recognized and named all the spectrum colors at 22 months with a small percentage of errors.

In published vocabularies of children 2 years old the following data were found. The colors used by each child follow directly after the name of the observer: Sanford (26) pink, blue, brown; another child white, black, red, blue; Pelsma (22) red, blue, green, white, yellow; Gale (13) first child, white, yellow; second child, red, blue, black; third child, none; Bateman (1) first child, pink, white; second child, pink, black, blue; Beyer (3) black, blue, red, tan, white, yellow; Boyd (10) black, red, white, yellow; Holden (19) two children used none; a third child, black and white.

A few vocabularies between the ages of two and three show the following colors used: Bateman (1) 28 months, white, pink, brown; Sanford (26) 30 months, black, white, red, green, blue, brown, pink; Preyer (23) 34 months, red, yellow, black, violet, brown.

From vocabularies of three-year-old children these color terms were culled: Gale (13) black, blue, brown, gray, green, purple, white, yellow; Pelsma (22) blue, black, brown, green, gray, pink, white, red, yellow; Boyd (10) black, blue, red, white; Bush (11) black, blue, brown, gray, green, orange, pink, purple, scarlet, tan, violet, white, yellow; Heilig (18) black, blue, brown, gray, green, orange, pink, red, tan, white, yellow; Bateman (2) blue, brown, pink, red, white; Whipple (32) black, blue, brown, green, orange, red, tan, white, yellow without hesitation, purple and a few others less correctly.

Sanford (26) reports a child of 40 months as using black, white, red, green, blue, brown, pink; another at 42 months used black, blue, green, red, white, yellow.

The next list gives the terms of this kind found in the lists of words used by four-year-old children.

Pelsma (22) blue, black, brown, green, gray, orange, pink, purple, red, tan, white, yellow; Mateer (20) black, blue, brown, green, pink, red, tan, white, yellow; Boyd (10) black, blue, brown, pink, red, white; Rowe (25) black, blue, gray, green, orange, pink, red, white, yellow; Bateman, black, blue, brown, gray, green, pink, purple, orange, red, white, yellow.

In addition to these, Sanford's report shows a color vocabulary of black, blue, green, red, white, yellow at 5 years of age.

Rowe's (25) child at six used purple in addition to those listed above for the fourth year. A number of these observers (Shinn, Hall, Preyer, Bateman) find the color adjectives the last type of this class to be used spontaneously.

In a few cases the progress made by the children in acquiring color terms is noted as follows: Shinn records it—at 16, red; 17, yellow and blue; 18-22 all spectrum colors; Bohn found—at 17, green, yellow; 19, blue, red; 21, gray, white, brown; 25, pink; 26, purple; Bateman's first child took much longer her course being—22, pink; 23, white; 28, brown; 30, red, blue; 37, orange, green, black; 38, yellow, gray; 45, purple; the second child who is not yet through the journey used pink at 21; black 22; blue 24; white 26; and orange at 27.

Experimental Observations

On young children three series of experiments have been carried out on the naming of colors. These are by Binet (4), Preyer (23) and Shinn (27). Their results are shown in the following table.

TABLE I

Observer	Age of child	Per cent correct	Order of discrimination corrected by Miss Shinn for name confusions
Binet	32-38 m. girl	....	red, blue, green, orange, yellow, pink, violet
Preyer	24-34 m. boy	70.3	yellow, brown, red, violet, pink, orange, green, blue
Shinn	18-21 m. girl	92.7	red, blue, yellow, orange, green, pink, brown, violet

Garbini (14) made a few tests at this age and found the children to name red most easily.

The same investigator (14) tested 600 Italian school children at 6 years of age. Only 35% could name blue, yellow, green, pink, orange, and violet. Tracy (31) gives the following table based upon an examination of German children from 8 to 14 years old by Lobsien. The table shows the percentage of errors made.

TABLE II

Class	Age	Red	Yellow	Orange	Blue	Violet	Indigo	Green
1	13–14	0	0	56	0	31	77	0
2	12	0	0	78	0	44	94	0
3	11	0	2	80	0	16	44	2
4	10	0	0	98	0	67	95	5
5	9	0	2	96	2	77	98	11
6	8	0	19	100	0	100	100	20

Tracy also states that Ziehen, testing children in the Normal School in Jena, found gray, green and brown named wrong or not at all.

Engelsperger and Ziegler (12) investigated 200 children in Münich. These children were just entering school. The results are shown in Table III.

TABLE III

Color	Boys 100		Girls 100	
	Correct	Wrong	Correct	Wrong
Black	99	1	98	2
White	99	1	98	2
Red	82	18	96	4
Blue	83	17	90	10
Green	79	21	84	16
Yellow	68	32	78	22
Violet	3	97	4	96
Orange	..	100	5	95

These investigators found no color blindness.

Turning now to American investigators, G. S. Hall (16) found in Boston that of children entering school 9% made mistakes in naming red, 13.5% in naming yellow, 14% in naming blue and 15% in naming green.

At about the same period, 1890, Wolfe (33) conducted an extended series of tests on School children in Lincoln, Nebraska. Over 2000 children from 5 to 17+ years of age were examined of whom 382 were from 5 to 7 years old. The following table shows the results.

TABLE IV

Age	5		6		7	
Sex	M.	F.	M.	F.	M.	F.
Number examined	28	20	71	77	101	85
White	96.4	95.0	98.6	100.0	98.0	100.0
Black	100.0	95.0	95.8	96.1	96.0	98.8
Red	82.1	100.0	90.1	98.7	97.0	98.8
Blue	67.9	95.0	85.9	96.1	91.1	97.7
Yellow	57.1	75.0	76.1	83.2	78.2	91.8
Green	67.9	90.0	81.7	85.8	88.1	98.8
Pink	20.8	73.3	50.0	65.5	40.6	77.0
Orange	.0	5.0	5.6	5.2	2.0	9.4
Violet	.0	.0	2.8	.0	.0	1.2

TABLE IV—*Continued*

Age	8-10		11-13		14-6		17+	
Sex	M.	F.	M.	F.	M.	F.	M.	F.
No. examined.	367	335	274	303	181	177	27	46
White	100.0	99.7	100.0	99.7	98.3	100.0	100.0	100.0
Black	99.7	99.4	98.2	98.3	98.9	98.3	100.0	93.5
Red	98.4	98.8	98.5	99.3	99.5	98.9	92.6	93.5
Blue	94.3	96.4	97.8	98.0	98.9	98.3	100.0	97.8
Yellow	92.4	97.0	95.6	97.7	98.3	98.9	96.3	95.7
Green	89.6	96.4	94.2	98.0	96.1	100.0	96.3	100.0
Pink	52.6	88.9	68.3	92.8	79.5	95.4	77.8	93.5
Orange	9.8	21.2	18.6	31.7	14.9	24.9	22.2	32.8
Violet	.8	.9	2.6	2.3	1.7	3.4	14.8	2.2

The relative accuracy is, therefore, as follows: white, black, red, blue, yellow, green, pink, orange, violet. The next table shows the proportion naming correctly all the colors.

TABLE V

Age	Sex		Age	Sex	
	M.	F.		M.	F.
5	55.4	69.8	12	76.0	78.7
6	65.5	70.1	13	74.3	80.6
7	67.1	74.7	14	76.1	80.6
8	70.2	76.8	15	76.2	79.2
9	71.1	77.8	16	76.7	79.5
10	71.2	78.3	17+	77.8	80.0
11	74.6	80.2			

The girls make very little progress after the eleventh year. The greatest gain of the boys also occurs before this age, yet they are still quite inferior to the girls. The boys continue advancing, until at seventeen there is less difference between the sexes than at any previous period.

Many other tables are given showing especially the character of the errors made.

The Binet-Simon Test

So far as the Binet test of naming red, blue, green and yellow is concerned, Terman and Childs (30) found the following:

TABLE VI

Age	Per cent passing test
4	65
5	74
6	84
7	96
8–12	100

In a similar research for which two thousand children in New Jersey were the subjects, Goddard (15) obtained the following results:

TABLE VII

Age	Number passing	Number failing
5	0	2
6	8	6
7	97	5
8	90	1
9	17	0

This table would indicate the test as fitting best the seventh year which Goddard recommends.

Bobertag (7), however, from an examination of school children in Breslau found:

TABLE VIII

Age	No.	Number right	Number wrong	Girls right	Boys right
5	20	7 or 35%	13 or 65%	.....	.....
6	58	28 or 48%	30 or 52%	17 or 58%	11 or 38%
7	82	47 or 57%	35 or 43%	27 or 60%	20 or 54%
8	38	34 or 89%	4 or 11%	17 or 89%	17 or 89%

This investigator was *"einigermassen erstaunt"* to learn that but little over half of the seven-year-old children could name these colors. His results seemed to indicate that the test was best left as one for the eighth year for German children. He found the order of discrimination to be as shown in the following table:

TABLE IX

Color	Total	Right
Red.....	178	165
Blue.....	178	139
Yellow.....	178	138
Green.....	178	132

The Investigation

For the experimental part of this paper 591 children were examined from the first three grades of the public schools of Missoula, Montana. This is a city of about 15,000 inhabitants, a railroad center, much interested in farming and lum-

bering. It is the seat of the University of Montana. Each child was separately asked to name the colors, generally in a quiet room alone with the investigator, with little to distract or disturb his attention. Every child responded, indeed only a few failed at first to understand the question.

The colors used were the following: white, black, red, blue, yellow, orange, green, purple. In about 150 cases gray and brown were used. The colors were shown to the child in the form of cards 8 x 5 inches. The cards were made of white cardboard of which one surface was covered with several sheets of tissue paper of the desired color. This paper was selected since it could be obtained in colors of the right shades and offered neither a shining nor a too dull surface. Each color was of the purest tone and strongest saturation obtainable. In the case of the green the color was somewhat too light and a few of the younger children confused it with white, altho they could name a more vivid green quickly enough.

The ages of the children were taken as the nearest birthday; a few coming exactly at the half year were taken as the next birthday.

Results

Group A—This comprises 151 children. Of these, 85 were entering school for the first time and had received there no color training. Of the 85, only 4 had previously attended kindergarten. The 66 remaining had been to school for 1 semester. 73 were boys, 78 girls. The table shows the results with this group.

TABLE X

Color	Boys				Girls			
	Right		Wrong		Right		Wrong	
	No.	%	No.	%	No.	%	No.	%
White	73	100	0	0	78	100	0	0
Black	73	100	0	0	78	100	0	0
Red	72	98.5	1	1.5	77	98.7	1	1.3
Blue	71	97	2	3	76	97.4	2	2.6
Yellow	62	85	11	15	78	100	0	0
Orange	59	80.5	14	19.5	72	92.2	6	7.8
Green	64	86.5	9	13.5	72	92.2	6	7.8
Purple	52	68.5	21	31.5	71	90.9	7	9.1

ERRORS—BOYS

Red—The single mistake in naming this color was made by a red-green color-blind boy. He called the red, green.

Blue—purple 1; green 1.

Yellow—brown 1; green 2; orange 5; purple 2; not named 1.

Orange—brown 2; purple 1; yellow 1; red 1; not named 8; blue 1.

Green—gray 1; purple 1; blue 2; yellow 1; red 1 (see note above); not named 3.

Purple—blue 10; pink 2; brown 1; not named 8.

Of these 73 boys, 57 or 78% passed the Binet Test.

41 boys had not attended school before. Of these, 13 or 31.7% failed to name red, blue, green and yellow. Among them were those who made the most errors in this group as for instance one who missed four names and 3 who missed 3 names each. A few of these boys had not yet reached the 6th birthday.

40 made no errors;
14 made 1 mistake (9 with purple; 4 with orange; 1 with green);
11 made 2 mistakes;
5 made 3 mistakes;
3 made 4 mistakes.

ERRORS—GIRLS

Red—not named 1 (same child failed to name blue, purple, green).

Blue—not named 1; purple 1.

Orange—not named 3; pink 1; yellow 2.

Green—not named 3; blue 3.

Purple—not named 1; blue 4.

Of these girls, 71 or 91% passed the Binet test.

44 girls in this group had not been to school before; of these only 3 failed to name the four principal colors. The other 3 failing this test had been to school for one semester. One was clearly deficient mentally as was one girl who did pass the test.

65 made no errors;
6 made 1 error;
5 made 2 errors;
1 made 3 errors;
1 made 4 errors.

Combined boys & girls of Group A.—151 children.

128 or 84.5% passed the Binet test.
106 or 70% named all the colors.
20 or 13.9% made only 1 mistake.

GROUP B—In this group are 160 children, 75 boys and 85 girls, all 7 years of age.

Boys.

White and black were named correctly by all. Red and blue were rightly named by all but one.

Two failed to name yellow (2.67%); 13, orange (17.3%); 3, green (4%); and 9, purple (12%).

70, or 93.3%, passed the Binet test.

57, or 75.8%, named all the colors.

11 made 1 error;
5 made 2 errors;
1 made 3 errors;
1 made 5 errors.

This last subject interchanged red and blue maintaining this confusion in naming a dozen or more articles of these colors. He failed to name yellow and orange and when pressed as to the latter called it blue. In addition he termed purple blue. Of the errors in naming orange the following were noted: pink, 4; yellow, 2; brown, 3; white, 1; not named, 2; green, 1. In naming purple the following mistakes were made: blue, 6; pink, 1; not named, 2. Green was called, yellow, 1; white, 1; and not named, 1.

Girls.

All the 85 girls in this group named white, black, red and blue correctly. One named all but orange (which she called "bik") and two all but purple. Of the remaining 3, two were not able to name yellow and orange while the last could not name yellow, green or purple. These three were found by other tests and questions, made at the same time, two to be deficient mentally and one at least retarded. It may be said, then, that of the normal children all could pass the Binet test while of the whole group 96.4% could do so.

Combined Boys and Girls—Group B

152, or 94.8%, passed the color test.

136, or 85%, named all the colors.

GROUP C—This group comprised 179 children, eight years old, of whom 96 were boys and 83 girls.

Boys.

Of these 96 boys all but 4 named all the colors correctly; 3 misnamed purple, blue, while one was unable to name green.

98.9% passed the Binet test.

95.8% named all the colors correctly.

Girls.

Of the 83 girls all but 2 named the colors without error; 1 called purple, blue, and 1 failed to name orange.

100% passed the Binet test.
97.5% named all the colors.

Combined Boys and Girls of Group C.

99.4% passed the test.
96.6% named all the colors.

GROUP D—In this group were 40 boys and 32 girls, age nine years. Of the 72, 2 boys misnamed purple (blue and pink), while one girl could not identify orange.

100% passed the test.
96% named all the colors.

GROUP E—29 children, 10-11 years old, all retarded in school. 28 named all colors correctly while one boy who was quite stupid called orange, brown and had no name for purple at all.

100% passed the Binet test.

Recapitulation

Giving percentage of correct responses

TABLE XI

Group	Age	Sex	No.	White	Black	Red	Blue	Yellow	Orange	Green	Purple	All correct	Binet Test
A	6	Boy.....	73	100	100	98.5	97	85	80.5	86.5	68.5	54.7	78
		Girl.....	78	100	100	98.7	97.4	100	92.2	92.2	90.9	84.5	91
		Both.....	151	100	100	98.6	97.2	92.5	86.3	89.3	79.7	70	84.5
B	7	Boy.....	75	100	100	98.7	98.7	97.3	82.7	96	88	75.8	93.3
		Girl.....	85	100	100	100	100	96.5	96.5	98.8	96.5	94.2	96.4
		Both.....	160	100	100	99.3	99.3	96.9	89.6	97.4	92.2	85	94.8
C	8	Boy.....	96	100	100	100	100	100	100	98.9	96.7	95.8	98.9
		Girl.....	83	100	100	100	100	100	98.7	100	98.7	97.5	100
		Both.....	179	100	100	100	100	100	99.3	99.4	97.2	96.6	99.4
D	9	Boy.....	40	100	100	100	100	100	100	100	95	95	100
		Girl.....	32	100	100	100	100	100	97	100	100	97	100
		Both.....	72	100	100	100	100	100	98.5	100	97.5	96	100
E	10–11	Both.....	29	100	100	100	100	100	96.6	100	96.6	96.6	100
A-E	6–11	Both.....	591	100	100	99.5	99.3	97.8	94	97.2	92.6	88.8	95.7

Discussion

The material collected shows that children may begin to use color terms as early as the sixteenth month, altho this is somewhat unusual. A date after the twentieth month seems to be that recorded by most observers, while in some cases none of these terms were used until the second birthday. But even after one or two names are used spontaneously the ability to acquire others and use them correctly appears to be quite variable. For instance, Miss Shinn's niece knew all the spectrum colors at 22 months, an age when most children are making their first efforts in this direction. Bohn's child had used seven color names by the twenty-first month while another child of the age knew only white. At 2 years of age one child had a color vocabulary of 6 words, 1 of 5, 2 of 4, 3 of 3, 2 of 2, while 4 used none at all. Of the nine children white and blue were each used by 5, red, black and yellow by 4, pink by 3, green, brown and tan only by 1, while orange and purple do not appear at all. Of the seven three-year-children, 5 used from 8 to 13 terms, 1 used 5, 1 used 4 colors. Red and pink are lacking in one case, almost surely an error in observation. Purple appears in only two lists, orange in three. Four children by their fourth birthday were using from 6 to 18 names, but purple appears in only 1 list and orange in but few of these. A single vocabulary at 5 shows the use of 6 names among which orange and purple do not appear. Red or its shade of pink seems to be the color generally first perceived and named but blue and yellow share this distinction, altho much less frequently. White and black seem to be sensed early. The names and impressions are only correlated later, but once learned they are known for good. Orange and purple are learned in most cases much later.

Turning now to larger investigations, that by Wolfe agrees in most respects with the above. White, black and red are the colors most easily named while none of the 48 at 5 years could name orange or violet. Garbini found that only 35% of his Italian, 6 year-old, children could name blue, yellow, green, orange and violet. Of 200 children in Münich only 65% of the boys could name yellow, only 3% purple, and none orange, while only 4% and 5% respectively of the girls could name the last two colors. Blue in both cases ranked higher than red. In Jena green was named wrongly or not at all. Purple and orange were not used. Still more striking are Lobsien's results who found no 8 year old children who could name purple and orange; indeed, over half the children 13 and older made errors in the last case. No mistakes at all were noted with red and few with blue.

With the above results those of the present investigation are sharply contrasted. The lowest percentage of correct answers was in the case of six year old boys for purple. But even here 68% responded correctly as compared with 35% at most of Italian children and 3% in Münich. While in Jena none apparently could name green, 86% could do so in Missoula. With eight year old children the dissimilarity is even more marked since in Missoula over 99% named orange and over 97% named purple correctly while none observed by Lobsien could do either. In Münich 84% of the children only could name red when just entering school while over 98% did so in Montana.

The same point is emphasized in connection with the Binet test. From the vocabularies it is seen that children as young as 22 months can name the four principal colors without hesitation or mistake. An example is the niece of Miss Shinn who concludes from her study that little children can easily be taught these terms. The little girl in question seems to have developed rapidly and perhaps Miss Shinn is somewhat optimistic. However, Pelsma's child could name these colors at 2 years while at 3 those observed by Bush, Heilig and Whipple could do the same. The elder child noted by Bateman first was able to pass the test in the thirty-eighth month and two recorded by Sanford used these four names before the forty-second month. The four-year-old vocabularies collected by Mateer and Rowe show the same ability.

In a few of the above cases it is not plain whether the child made errors and how many in the use of the terms but in most of the notes the point is clear.

Of a group of 30 children observed by the author who were from 4 to 6 years old and attending kindergarten, at least 21 were able to pass this test.

The results of the present investigation are in harmony with those of Terman and Childs who show that in California 65% of the four--year-old children and 74% of the five-year-olds could name the colors constituting the test. The following table compares their results with those found in Missoula and shows the close agreement reached.

TABLE XII

Age	Terman and Childs	Bateman
4	65	...
5	74	...
6	84	84.5
7	96	94.8
8	100	99.4
9+	100	100

These figures are about the same as Goddard found for ages 7-8-9, but much better than for his 6 year olds. However, only 14 of the latter age seem to have been tested in this respect by him.

With the conclusions of foreign investigators, however, the present work is not in harmony. Bobertag's careful research on the Binet scale shows only 57% of 82 children in Breslau able to pass the test in question at 7 years and only 89% at 8. Binet as already noted first placed this among the qualifications for a mental age of 8, altho afterwards placing it among the tests for the year earlier.

There seems to be then a real difference between European and American children in this respect. That this work should show an improvement on the part of children over those examined by Wolfe is understandable when it is known that the children then in the Lincoln schools received no color training at all, as well as when the recent wave of interest in children, kindergarten and Montessori in this country is considered. But why contemporaneous children in the two continents should differ so much is not clear. American children are said to begin talking at an earlier age than those abroad and to progress somewhat more rapidly at first as well, so perhaps some of the difference may be ascribed to this. But whether the rest is due to lack of interest in the home or training at school or a real difference in ability does not appear.

Stern (29) says that, "in general for a test to be valid for a certain level, the requirement is that approximately 75 per cent of all children at this age shall be able to pass the test;" and "that test is most useful that shows the most decided advance with age." From the first consideration Terman and Childs' work shows the test to fit best the fifth year while their work coupled with the present investigation would seem to indicate the same to be true and marks the upper age limit as six. The second consideration mentioned by Stern may operate against this test being used at all if one better can be found to take its place since the ability to name these colors apparently increases so gradually with age. This objection would be strengthened if 50-60% of 3 year old children could pass the test. Furthermore, as Stern points out, to transfer simply on the above basis any test from one year to another disturbs the whole value of the tests at the latter level, and necessitates a general rearrangement. Again if the test be included in those for the eighth or even seventh year it is somewhat incongruous to find children (Shinn, Pelsma) not otherwise precocious passing it by the second

or third birthday. As is true with the whole subject both in general and with special topics, more information is needed before the fate of this particular test can be determined.

Sex Difference—This paper brings out again the well known fact that boys show much less discrimination for colors than girls since for all the groups 80.4% of the former as against 94.4% of the latter named all the colors correctly.

Effect of School Training—In the first group 85 children had been to school for only a week or two and had received no training in color naming. Here 71.2% passed the Binet test while of those who had been to school for 1 semester 89% passed. In the latter group there were many less errors made in the other colors as well.

Significant Confusions—When a child really does not know a color name he is apt to say anything that occurs to him in the nature of a guess which accounts for some of the queer errors noted in this as well as in other investigations. Some of the errors are so consistent however that they deserve special mention.

There was noted a tendency to name weakly saturated colors white, and the darker ones black. Some confusion was shown with blue and green and with yellow and orange. The mistakes with orange consisted in calling it pink or brown. Purple was most often miscalled blue but sometimes pink. The numerous failures to recognize these two colors may be due partly to the fact that they are used rather sparingly in dress and decoration.

Summary

1. 591 children in the first three grades of the Missoula schools were examined with regard to their ability to name colors.

2. Of these children, 88% named correctly white, black, red, blue, yellow, orange, green and purple.

3. 95.7% passed the Binet test (VIII, 3 or VII, 3) requiring them to name red, blue, green, yellow.

4. The results compared with other American observations show that the above test is one plainly not to be placed higher than the 7th year for American children, better in the 6th year and even possibly in the 5th year.

5. A semester's school training markedly increases the ability to name colors.

6. The recognition and naming of colors is weakest in the case of orange and purple.

7. American children appear to have more ability in this respect than French, Italian or German children.

8. It is probable that the majority of American children could be taught to name correctly the principal colors by the fourth birthday.

9. Some confusions between colors are noted upon which attention can be concentrated in kindergarten and school.

Conclusion

In conclusion it is a great pleasure to thank for their necessary and kind co-operation in this undertaking Mr. J. U. Williams and Miss Alma Binzel, Superintendent and Assistant Superintendent of Schools in Missoula. Finally, special thanks are due Miss Gertrude Zerr who assisted the author in taking most of the observations for this work.

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THE NEW-BORN CHILD

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At present the knowledge of the condition of the new-born child's body, senses and reactions is so scattered that it is difficult for one to form an idea that is even approximately complete. It seems worth while, therefore, to give a summary of the more important facts, although it can not be complete in the allotted space.

The data on height and weight are too well known to detain us. At birth the average boy weighs 3.7 lbs., with the limits at 3 and 12, but 87% of the cases between 6 and 9 lbs., and the average girl is slightly lighter. The average boys' birth height is 19.68 in., with the limits at 15 and 24. The following figures seem to be generally agreed on as averages for other proportions: The circumference of the thorax measured just below the nipples and the angles of the scapulae averages 13 in.; of the head measured at the level of the occipital protuberance, 13 4/5 in.; of the abdomen, 14.3 in. During the first six months the head circumference grows about 3 in.; during the second six, 1.8 in., and thence more slowly. Forsyth states that at birth the head is ¼ the length of the body while in adults it is only ⅛. In the new-born child the trunk is longer than the leg or the arm, and the arm is longer than the leg. The entire arm has the same length relative to the whole body, but the forearm and hand are longer relative to the upper arm than in the adult—a characteristic also of anthropoid apes. We thus get a creature with relatively very large head, short legs, and long body and arms.

Again, Dekker calls attention to the fact that the small size of the upper and lower jaws brings the mouth closer to the receding chin on one side and to the eyes and the flat nose on the other, while the cranium seems to bulge over the face and press it down.

The bones of the new-born have a characteristic fibrillar structure, rich in blood vessels and the components of marrow, while the periosteum has a layer rich in cells. The periosteum grows very rapidly in thickness but the lamellae, Gundobin says, are still very imperfect in the ninth month.

By the time the child is two years old the bones are very similar in structure to those of an adult.

The epidermis is very thin and the individual cells are of nearly adult size. The sebaceous glands are active from about the fifth month of prenatal life, but the development of the sweat glands is not yet well known. The hair is fully developed. The papillae of the soles are distinct but those of the back and head are not so complete. The capillaries of the skin are relatively larger than in the adult. The tissue of the true skin is well developed but the individual fat cells are smaller. The Paccinian bodies are well developed and also the arrectores pilorum.

With these characteristics, the baby is peculiarly subject to parasitic diseases of the skin, and the skin serves far more as an organ of respiration than in the adult. It also gives off more water (Bouchard estimates about 60 g. in 24 hours). At the same time it does not regulate the heat of the body well.

The alimentary canal of the new-born child has important differences from that of the adult. The relative weight of the salivary glands is no greater than in the adult, and their growth in weight in the first year is at the same rate as the total body weight. At birth the saliva is relatively small in amount, but Korowin and Schiffer seem to have shown that in chemical composition and function it is not very different from the adult's, especially in that it contains ptyalin. The small amount secreted at first is attributed to the lack of development of the cortical center. The stomach is entirely covered in front by the liver, and its long axis lies obliquely. It is little developed at the fundus and grows with especial rapidity there. The pyloric section also broadens so that the stomach as a whole becomes longer. Forsyth gives the following estimate of the capacity of the stomach of children of different weights (which he considers more significant than age): for a child weighing 6½ lbs. the capacity of the stomach is approximately 2 oz.; for 9 lbs., 3 oz.; for 11 lbs., 4 oz.; for 15 lbs., 6 oz.; for 20 lbs., 9⅔ oz. All the digestive juices are present at birth, except free hydrochloric acid, but the acidity is relatively small and the pepsin small in amount. The movements are more energetic and absorption more rapid than in adults.

The liver is probably a little heavier proportionately to body weight than in adults, though the figures given vary widely, from 1/18 to 1/40, while in the adult it is 1/28 to 1/33. The weight is doubled by the ninth or tenth month and has in-

creased about 3½ fold by the end of the third year. At birth it forms a relatively small amount of bile, its function of oxidation seems very imperfect, and also its power to neutralize poisonous substances.

Like the stomach, the pancreas secretes at birth but in relatively small quantities. It doubles its weight in the first two or three months, coincidently with its increase in functioning. The entire alimentary canal increases about twenty fold in weight from birth to maturity.

The total length at birth is about six times that of the body and at maturity about five times, the large intestine growing relatively more than the small. In the first three years this growth is especially rapid. The mucous membrane of the intestines is more developed than the muscular layer and is richer in blood than in the adult. It contains relatively more lymph vessels, indicating that its function is more that of absorbing than of digesting, as is also indicated in the poor muscular and nervous development, the delicacy of the membrane and its large amount of blood.

The kidneys are relatively large at birth and the supra renals as large as in the adult. The urine increases rapidly in amount from about 6 oz. a day at the end of the first week to 16 at the end of the sixth month, Forsyth estimating that for every 100 cc. of milk taken 60 of urine are passed. He also calls attention to the fact that more than 80% of the food energy is used to make good the great losses of heat caused by the relatively large body surface of the baby (nearly three times that of an adult, relative to body weight, according to Vierordt). In general, Camerer estimates that per kgm. of body weight the child takes the same amount of protein as an adult, but for carbohydrates the proportion is 11:5; for fats, 4:1, and Forsyth adds, for water, 4:1.

Data as to the weight of the heart at birth differ. Falk found it to be 23.37 g. (7/9 oz.) in boys, doubling in weight by the eighth month and tripling between the second and third year. In the fifth year its weight was four-fold and in the sixteenth year eleven-fold that at birth. It grows in all dimensions but a little more rapidly in length than in breadth. The irregularity of the heart beat at birth is due to the fact that the inhibitory cortical centers are not developed. The frequency lessens with age and also inversely with size. Vierordt gives for the average number per minute at birth, 135-140 and for the first week, 123-138, while Pokrowski for the first days after birth gives it as 110-120. Blood pressure is very low (60-61 as estimated by Ssladkoff with Gärtner's

apparatus). It oscillates somewhat during the first month but then remains almost stationary till the ninth year.

The weight of the lungs depends upon the amount of blood in them and therefore the figures given vary from 42 g. to 57 g. (an average of 1½ oz.). By the end of the third month they nearly double their weight, but during life keep approximately the same relation to body weight as a whole as at birth, viz., 1:43 or 1:59. Vital capacity at birth is not known. Frequency of respiration at birth is given as 44, gradually diminishing to 30 by the end of the first year.

The lymph glands are relatively large and active in infancy, as are the spleen, thyroid and thymus.

The infant's blood has slightly less specific gravity than the adult's, but is richer in red and white corpuscles and in hemoglobin. The child's blood at birth, however, is far more like that of the adult as the placental circulation has just ceased.

We have already referred to the growth of the skull. The growth of the brain is a different matter. The weight of the total brain is given as from 290 to 415 g. for boys and 283 to 400 g. for girls, with the average as given by Gundobin at 389 for boys and 354 for girls. There is rather general agreement that by the eighth or ninth month it doubles its birth weight and triples it during the third year. Relative to body weight the brain at birth is about as 1:7, while in the sixteenth year the proportion is about 1:17.

As compared with the adult, the infant's cortex has very incompletely developed convolutions but after the fifth week these develop rapidly, and development of the cells is very rapid even in the first week, the various layers being visible by the second week, and almost the same as in the adult by the 18th to 20th months. Authorities differ as to whether any medullated fibers are present at birth in the cortex proper, but all agree that after birth at least they develop very rapidly. It is probable that individuals may differ in the degree of development at birth. At birth the cortical centers are still undeveloped, but their power to function increases rapidly.

We know little relatively about the spinal cord at birth. Its weight is estimated at about 4 g., and it probably doubles its weight in the first year and then grows much more slowly, not tripling it until about the fifteenth. It probably doubles in thickness during the first two years and then increases very little more in this dimension. After the second year it grows in weight more rapidly than the brain but before much less rapidly. Here, too, authorities differ as to when the myelin sheath is first to be found in any of the fibers of the cord, but all agree that the paths of conduction are functioning at

birth and even in the ninth prenatal month, with the exception of the pyramidal fibers which develop later than the others. Ssljotoff and Gundobin believe that these become medullated between the second and third month after birth, with some exceptions.

As to the peripheral nerves, the myelin sheath is first formed about the motor nerves from brain and cord in the fifth month of prenatal life, then in the mixed and finally in the purely sensory. At birth the roots of the motor nerves have the sheath while the others, except the auditory, have many incomplete sheaths and free axis cylinders. By the third year these can rarely be found.

From this incomplete development one would expect to find that at birth the child is less easily stimulated than later. The reflexes which pass through the brain, such as the jaw, pupillary and nostril reflex, are frequently lacking at birth or are very weak and develop slowly; those with centers in the cord, like the patellar and Achilles reflex, are present after the first week.

Turning now to the special sense organs, Weiss gives for the weight of the eyeball at birth, 2.29 g., which somewhat more than triples by maturity. Its growth is closely parallel to that of the brain. The three dimensions differ relatively more than in the adult, and the new-born child is usually hypermetropic, according to the measurements of Merkel and Orr. So rapid is growth in some dimensions that in a child of a few months the three dimensions are almost the same. A striking characteristic is that in the new-born child the foveas are as far apart absolutely as in the adult, so that no later growth occurs here and it is not possible at first to fixate for binocular vision. The cornea is nearly as large as in the adult. The lens is nearly spherical, projecting front and back more than in the adult eye, and gradually flattening so that its length from front to back lessens not only relatively but absolutely. It grows most rapidly during the first year. The iris, as is well known, has little pigmentation. The choroid is as thick as in the adult and so the eye is especially well supplied with blood. The ciliary muscle is about ⅔ as long and ½ as thick as in the adult and grows very rapidly in the first year. It contains both circular and long muscle fibers. Merkel and Orr found the retina thin and the layer of rods lacking at the *ora serrata.*

Given these conditions, the functioning of the eyes is necessarily imperfect at birth. Coördinated movements of the balls are rare before the fifth week, and Gundobin says that up and down movements appear considerably later than lateral.

At birth light and touching the lids causes them to close, but the pupillary reflex does not appear till the end of the fifth week. The reflex wink when an object approaches the eyes does not appear till the fifth month, Gundobin says, but other observers place it between the sixth and ninth weeks. At birth, therefore, while the child is not blind, the lack of convergence and accommodation and the relative inability to follow an object, must limit his visual world to indistinct blurs. Even during the first week attempts are made by some children to follow light, and from the second week there are attempts to fixate bright objects. Convergence is usually fairly well advanced by the sixth week, and accommodation begins about the eighth week, the more distinct vision serving as a great intellectual stimulus.

Some parts of the ear are practically of adult size and form, while others do not complete their growth till puberty. The bones in which the ear lies are still growing rapidly, are relatively smooth on the inner surface while later they show indentations corresponding to the convolutions, and the various openings for the passage of nerves and blood vessels are still forming or closing. The fissures are not yet closed between the bones. The external meatus has a more vertical direction than in the adult, which during the first year gradually becomes horizontal. Its walls lie close together and it is closed at birth with a mass of epithelial cells and vernix caseosa. Its sebaceous glands, Alzheimer found, end in the hair follicles, whereas in the adult they end in the cutis. The position of the tympanic membrane also alters with growth, the angles relative to the surrounding walls becoming greater. The outer and inner layers of the membrane seem thicker than in the adult, while the fibrous middle layer and the size of the membrane are much as in the adult. The bones of the middle ear have adult size. The membrane lining of the tympanic cavity is especially rich in cells and blood vessels, and contains fewer spindle shaped fibers and more round and oval than in the adult. The Eustachian tube lies more nearly horizontal than in the adult. The bony labyrinth of the internal ear is of almost adult size.

As to the hearing of the new-born child, formerly it was stated that he was deaf for a day or two, but later observations do not confirm this assertion. In testing hearing it is necessary of course to eliminate the possibility of jars—such as come with the banging of a door—and to get only sound. Unfortunately, observers do not usually describe the sounds used as stimuli very definitely. The Sterns note that while

many new-born children are deaf a day or two, not all are, though doubtless all have much dulled sound sensations on account of the middle ear being filled with amniotic fluid. Peterson, on the other hand, experimenting with a rattle which he is confident eliminates the possibility of jars, tested 48 children within six hours of birth, 11 of them within one hour and 1 within ten minutes, and in every case obtained a reaction of squirming, moving, starting or crying. During the first day 139 boys and 137 girls squirmed or made some other slight movement at the sound. Genzmer also obtained reactions from 15 infants during the first day to the sound of a bell, and Mrs. McLeish noticed that her little girl stopped fretting when talked to, when she was only 14 hours old. She states specifically that the child was not touched. Other observers of individual children, Talbot, Cramaussel, Tracy, Preyer, Shinn, Sully and Baldwin put the first sound reactions variously from three hours to three weeks after birth. If we knew the pitch and intensity of the stimuli we should have some real knowledge of the child's hearing at birth. As it is, we can only say that at birth doubtless the child can hear loud sounds, and probably shrill and intense ones better than low ones. But we do not know the limits either of intensity or pitch, nor the individual variations.

The nose of the new-born child is small, short and flat; the cavities little developed, the cavity above the bridge lacking and the lower portion of the nasal passage undeveloped. The mucous membrane is very delicate and rich in blood vessels. The lachrymal canal is also undeveloped relatively, so that infection is easily carried from nose to eye.

The sense of smell at birth has not been studied by many observers. Kussmaul, using asafetida and ammonia fumes got the same reactions as with adults. Peterson tested 14 children less than six hours old with asafetida and ten responded with sucking movements. Out of six tested with oil of geranium four sucked and out of 21 tested with compound spirits of orange 18 sucked.

The taste buds are more widely scattered over the mouth cavity in the new-born child than in the adult, sometimes being found on the cheeks and the back of the nasal passages as well as on the tongue. All observers agree that the new-born reacts to salt, sour, bitter and sweet. To bitter, whether the stimulus was tincture of gentian or solution of quinine, most children react by grimaces and movements of rejection and very few by continued sucking. To sweet on the other hand, nearly all respond by contented sucking but a few do not. To acids, most react by rejecting. To a concentrated

solution of salt 27 out of 28 children tested by Peterson within six hours after birth reacted by sucking, and though a few grimaced at the first taste there were very few expressions of dislike and no spitting out. Of children tested the first week, 503 boys and girls sucked contentedly while 295 showed discomfort.

If we turn now to other reactions involving particularly the larger skeletal muscles, we should first note that these muscles are estimated to increase 48 fold in weight from birth to maturity, forming about 43% of the body weight of the adult male. Vierordt estimates that at birth they form only 23% of the total body weight. In structure they differ somewhat from the adult also. The muscle fiber is relatively thin; the nuclei are closer together, of roundish form and often relatively large. In cross section the fibers appear round as a rule though there are also some polygonal ones. The interstitial cellular tissue is unusually rich in cell elements. Westphal's studies are thus confirmed by the later ones of Woizechowski and Narbutt. The chemical analyses made by Baimakoff show that there is a larger percent of water, and a smaller percent of solids, albuminoids, ash and iron.

We have already noted the imperfect development of the cortical centers at birth and the fact that as a result certain reflexes are impossible, while all are imperfect, as appears in the various periodic reflexes necessary to sustain life, and also the eye reflexes. The group of reflex and instinctive acts focussing about the mouth is more perfect than others. Sucking is usually present, but if the child is weak it may have to be taught; swallowing occurs before birth; licking has been observed on the first day and also sneezing. Biting and chewing do not usually appear before the fourth month, but may come before any teeth are through.

Two characteristic groups of reflexes are the responses to stimuli of the soles and palms. Within five minutes after birth if the soles are lightly tickled the toes will spread out and usually the legs will be drawn up. In a few cases flexing of the toes occurs. If the palm is touched the fingers will clasp and the grasp is frequently strong enough to support the baby's weight, with the elbows flexed. Robinson, testing 60 new-born children, found that they could hang for a time varying from two seconds to one minute and their strength of grip increased up to the third week, afterwards diminishing. Other observations, however, show that the grasp may be weak or even lacking in some cases.

The so-called impulsive or spontaneous movements, resulting from nutritive changes within the motor centre, with no

discoverable stimulus outside the centre and so no sensory factors, are numerous and vigorous at birth in proportion as the child is healthy, but their variety is not great. Arms and legs stretch and bend, but, Trettien says, always forward and backward, up and down, never out and in. Fingers and toes spread and bend, face muscles tense and relax, eyeballs move with the lids closed, crowings and babblings occur. Mumford and others believe that many of these movements, such as the swimming movements are vestiges of former useful ones, instincts well nigh atrophied. The habitual posture of the infant approximates the prenatal: legs bent at hips and knees, feet crossed and toes curled down over the soles; arms lying on the chest, bent at elbows and wrists, and fingers closed, with the shoulders also drawn together. That is, the postnatal development would seem to be to large degree an uncurling of the child's body and in this the head on the whole leads.

The ability of children to lift the head at birth varies considerably. The neck muscles, small at birth, grow by maturity to nine times their original size. Few can raise the head unsupported on the first day. Most observations do not note it till the third day and then only for an instant. Peterson records a stiffening of the neck muscles, or attempts at raising the head in 142 children during the first week, but success in only 31 cases. Head and shoulders were lifted during the first week by three boys and one girl. Demme's observations on 150 children show that most children can hold the head up continuously, if strong, between the third and fourth months, but if weak not till between the fifth and sixth months or later. The observations of Preyer, Shinn and others also agree with these. Even before accommodation and convergence are established the child has incentives to raising and holding the head up, in his attempts to reach the breast and hold himself there, and to follow and hold lights or bright moving objects. After accommodation and convergence are established, when the visual world has become much clearer, the longing to look causes far more strenuous efforts to hold up the head, and to turn it in all directions. Coincidently with this of course go movements of all the upper part of the body, straightening of the back and shoulders, reaching movements of the arms, and in the stress of excitement leg movements as well. To trace the gradual development of voluntary movement from these reflex and instinctive responses is not our task here however.

The act of sucking is so important to the infant's well-being besides being so well developed at birth that various

studies have been made of its mechanism. It involves all parts of the mouth—soft and hard palates, cheeks, uvula, gums and lips, besides the characteristic pad of fat in the cheeks which supports the buccinator muscle, and prevents the cheeks from being drawn in too much. When the nipple is taken into the mouth the tongue curves about it at the margins and press it against the roof of the mouth, at the same time driving out much of the air. The pressure is then released by dropping the lower jaw, which of course carries down the tongue and enlarges the size of the cavity. Attempts have been made, but with widely varying results, to determine the amount of pressure used. Thus Basch says that in the first days of life the jaw pressure is 100 to 300 g., and at a month, 800 g. He also measured the pressure necessary to draw out the milk, and concludes that without the pressure from the jaws nursing would be ineffective. Cramer, on the other hand, believes that the changes in air pressure and the use of the tongue, the *Aspirationenergie,* are sufficient, but the attempts by different investigators to measure this have given such widely different results that no conclusions can be drawn at present.

In the last few years the Freudians have called attention emphatically to the significance of sucking for later development, believing that irregularities in feeding and the formation of greedy and sensuous habits here lay the basis for later sex abnormalities, while on the other hand the correction of such tendencies as soon as they appear may avoid serious nervous troubles later on. That is, even if we assume that the child gets the right kind and amount of food, it is also very important that he should get it in the right way, neither with too much ease nor difficulty; never with pain and dissatisfaction, and on the other hand, never with the sensual abandon that is a picture *in petto* of adult gormandizing and sensuality. Even at this early stage temperance and control must begin. From a somewhat different angle, the transference of the Pawlow experiments to children, has also stressed the fact that the child's knowledge, will and feeling focus first about food getting and in all probability radiate out from this activity to what we consider the purely intellectual and abstract. The face and the special sense organs have developed around the upper end of the alimentary canal as aids in getting food, and in a similar way perception, memory and the higher thought processes have appeared as aids in more and more complicated and indirect methods of self-preservation. So, inversely, if good habits are formed in the infant's food getting the basis is being laid not only for

physical health but for mental and moral normality or superiority.

In the new-born child the larynx is relatively larger than in the adult, somewhat funnel shaped, with the front walls meeting in a bow. The epiglottis has something the shape of a canal, while in the adult it is very slightly concave. The larnyx lies higher in the throat than in the adult, and the vocal cords are relatively shorter, growing very rapidly during the first year and again at puberty. The positions of the various bones are also somewhat different relative to each other.

The first cry of the new-born child should be clear and distinct, and if feeble it usually indicates lack of vitality. It is purely reflex, but even by the second day the Sterns note that the difference between crying and quiet indicates the difference between discomfort and comfort. Deaf infants make almost the same noises as hearing ones, so that the deafness may be unnoticed for months. At first undifferentiated, within a few weeks the hunger cry differentiates from that of weakness and some time during the first three months the child begins to use pleasure sounds, laughs and lalling. A persistent cry not due to hunger or cold shows some pain, and if paroxysmal, with the feet drawn up and abdomen distended, it may mean colic pains. Peevish whining indicates poor health. Cotton says there is no such thing as a meaningless cry, and indicates the characteristic cries thus: shrill shrieks at long intervals often accompany inflammation of the brain; short suppressed cries, inflammation of the lungs; sudden screaming at night, night terrors; cries after swallowing, sore throat, etc. To the little baby these cries are of course not expressive at first, but as they bring help and relief they come by degrees to be used as symbols, that is as crude words. Thence the development of speech is a constant increase in complexity and richness.

What can we say then of the psychical condition of the new-born child, or is it more desirable to say nothing except what we can put into behavioristic terms? First we should note that different though the surrounding conditions are before and after birth, increasing knowledge makes us realize more and more that the reactions of the child are not so different as we should expect. In prematurely born children, even so early as the seventh month, the special senses are ready to function apparently as well as in children born at full term, and this leads to a consensus of opinion that probably there are at least occasional stimuli for these senses and reactions to them. We find such terms as "dulled feelings or sensations," "vague or diffused consciousness," used to describe

the psychic prenatal state. It is also said to be a condition of sleep with now and then dreams. Ferenczi assumes a real though subconscious psychic life characterized by the feeling of *Allmacht,* the feeling that one has all one wants and can desire nothing more. Not only this, but so agreeable is this condition that after birth, he believes, all the instinctive strivings both of the child and the adult are in the direction of reproducing this happy state, preferably by getting everything they want, but failing that by day-dreams and by recourse to sleep itself, which of all states is closest to the prenatal. Whether or not this is a true account, it is certainly true that the new-born child sleeps some twenty hours out of each twenty-four, and that even when waking its activities and reactions are largely or wholly reflex, instinctive and impulsive, not voluntary. The condition of the cortex makes it impossible that stimuli should become associated at first, so that if ever there is a period when the human being's responses are purely mechanical it is in these first weeks. We assume, to be sure, that sensations and pleasure and pain states are present, and that those from the organic processes have a different quality than those from the special sense organs, and give the basis for the difference between self and the external world, but the isolation of each sensation or feeling, even when it exists at the same time that others do, makes a condition difficult for us to conceive. Is the new-born child's consciousness just an aggregate, not a unity, of feelings and sensations (including of course the feelings and sensations of the motor reactions)? And is his psychical development simply a progress in reducing the multiplicity of his coexistent psychic states to a unity by getting all the associative bonds possible not only between all the cortical centers but between the cortical and the spinal and sympathetic ganglia. As we try to get a definite conception of embryonic development we get a strong impression of cells or groups of cells developing at first more or less independently of each other but forced to adapt to each other on account of the physical pressures exerted, the exigencies of the food supply, etc., in a bewildering multiplicity of details. And again, as we observe the functioning of the organs of the new-born child, we get similarly the impression that while they usually work together enough to keep the body going as a single organism, they are by no means harmonious. Though the condition is far from the early animal stage in which division of the cells will result in two perfect beings, it is also far from the adult engrossed in some complicated activity such as giving a speech, where each organ acts on and is acted on by every other and

the whole personality influences others like itself for some definite end. On the other hand, the rapidity with which the learning process goes on in the first year of life is so great that at the end the child is already entering upon the human heritage of speech and the erect posture. He has voluntary control of the larger and many of the smaller muscles and can inhibit many movements. He can use his body as a tool to gain a desired end.

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THE WAR-GAME. A PASTIME OF THE GERMAN ARMY-OFFICER

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An essential part in perfecting the tactical proficiency of the German army officer is played by the "*Kriegspiel*" or war-game. Although of comparatively recent origin, it has occupied for a number of years, and does now, a prominent place on the winter-programme of German army officers of all branches of the service. In the original sense the term "war-game" was applied to all tactical exercises, executed on a drawing or a relief, with a view to objectively supplementing instruction in the elements of knowledge which is required by commanders of troops of various grades. Certain problems were set and solved by the instructor co-operating incessantly with the players, whereby the instructor took one side and the players constituted the opposition, or the players were divided into opposing forces whose movements were supervised and criticized step by step by the instructor. As played more recently, however, the war-game has outgrown these earlier exercises of a mere theoretical nature. Its aim now is a representation of actual conditions of warfare and, as a consequence, it has become so practical that it may be defined as "playing at war" as differentiated only from really "being at war." The required knowledge is gained no longer by instruction merely, but by experience,—the contemplation of consequences accruing from the commanding officer's own actions. In this respect it is said to be equal, if not superior, to the manoeuvre, since the greater perspective, and the distinctness of the whole arrangement, in the war-game, overbalances the advantage of the more drastic lessons taught by the results of mistakes or errors of judgment in actual manoeuvres. In the latter, moreover, the exercises necessarily are isolated and the movements of troops are executed only as far as the initial stage of an action, thus making an enormous claim on imagination, whereas in the war-game action is continuous and is carried through to the end, and again, since repetition is possible day after day, the essential points of procedure are acquired spontaneously and are apt to be more firmly impressed on memory.

The tract of land which is to serve as territory for the

exercises may be reproduced in the form of a drawing or relief. Of these, the drawing, usually on a scale of from 1 : 2500 to 1 : 5000, is the more popular one, owing chiefly to its cheapness. The relief, however, is much superior. Elevations and depressions being marked for the eye, a more clear and life-like picture of an action is created, attention is not diverted by minor details, and the whole course of the war-game is facilitated and accelerated. The cost of such a relief need not be excessive. A wooden base painted light green, rivers and lakes painted blue, woods and forests of coarse sand glued to the base and painted dark green, hills and other elevations of putty, and the whole cut up into four or eight sections, thus permitting a variety of combinations, make an inexpensive and acceptable working-model. Exact reproductions of a really existing territory or of fortresses and their surroundings require of course more careful workmanship and, owing to the large number of models necessary, make the relief much more costly than the simple use of charts.

The marks representing troops of different sizes and arms are pieces of sheet-zinc, variously colored, and must in form and dimensions reproduce reality as closely as possible. Troop-marks which are too massive or so high as to rise above the buildings on the relief act as disturbing factors. If rightly proportioned they are easily manipulated with the aid of a small magnet. In addition to the painted troop-marks, representing the various formations of bodies of infantry, cavalry, or artillery, it is advisable to have on hand a number of small, plain pieces of zinc to serve as marks for railroad-trains, ambulances, trenches, impediments, etc. All these marks, but especially the troop-marks representing different formations, should in their dimensions approximate the scale of the relief. Distances are measured with the aid of a compass.

The most important personage in the war-game is the director. The combination of qualities which he must embody is of such rare occurrence that the service-regulations of the army recommend the waiving of all distinctions of rank and length of service in his selection. Logically, of course, the commanding officer of a regiment should be the man best fitted for this position, but that is not always the case. In the first place, the director must be possessed of comprehensive knowledge and ample experience in the sphere of tactics and the history of military campaigns. Next, a lively imagination, of particular service in the plastic description of details, is required, which, on the other hand, he must

know how to curb by calm reflection. He furthermore needs a vivid, concise, and effective mode of presentation, a good memory, and, finally, a fair amount of didactic endowment should be his.

It is obvious that the course of the war-game will be beset by difficulties unless the commanders of the opposing forces and their subordinate officers have considerable tactical skill at their disposal, including a knowledge of the tactical fundamentals and the various formations of not only their own arm but of all three branches of the service, and, in addition, sufficient practice in the giving of orders for, and during, the development of an engagement. Proficiency in these accomplishments is best acquired in a brief preliminary series of exercises under a competent instructor. Suggestions concerning the nature of such exercises and the manner of conducting them may be found in two publications, (1) *Taktische Entwickelungsaufgaben für Kompagnie, Bataillon, Regiment und Brigade,* by R. von Briesen, (2) *Taktische Aufgaben für Kriegspiel, Übungsritt, Dispositionsübung und Selbststudium der Infanterie, in Anlage und Durchführung,* by Zöllner. Since experience teaches that from 15 to 20 is the most favorable number of participants in the war-game and the whole body of officers in a regiment of each of the three branches of the service exceeds this number considerably, the exercises also offer an opportunity for selecting the more clever ones and then gradually advancing the rest to the required standard of efficiency.

Concerning the size of the bodies of troops employed in the war-game the most promising procedure is to begin with smaller bodies of men, emphasizing intensive analysis, and later manipulate with divisions and whole regiments. Analogously, in the choice of problems the prevailing maxim should be from the simple to the complex. Valuable information with regard to these matters may be secured by the director of war-games from the study of relevant chapters in the following publications:

(1) Balck,—*Taktik.*
(2) Briesen,—*Taktische Entwickelungsaufgaben.*
(3) Meckel,—*Grundriss der Taktik.*
(4) Scherff,—*Sämtliche über Taktik erschienene Schriften.*
(5) Schlichting,—*Taktische und strategische Grundsätze der Gegenwart.*

As model collections of tactical problems the following are recommended:

(1) Gizycki,—*Strategisch-taktische Aufgaben nebst Lösungen.*
(2) Häseler,—*Taktische Aufgaben und Besprechungen.*
(3) Immanuel,—*Taktische Aufgaben.*

(4) Moltke,—*Taktische Aufgaben aus den Jahren, 1858-1882.*
(5) Zöllner,—*Taktische Aufgaben für Kriegspiel, etc.*

The director's first function is the presentation of a war situation and of the tasks of the playing parties which oppose each other. Situation and tasks combined are known for short as "supposition." Since in actual warfare small bodies of troops (the most advantageous units for the war-game to begin with), are rarely expected to solve independent problems, and since the first consideration in the choice of a supposition is that it represent natural conditions, suppositions taken from small warfare, such as the covering of requisitions, evacuations, etc., are usually at first selected. The supposition given, the opposing forces proceed with the solution of the problem and, in the opinion of some writers on the subject, this is best followed by a brief critical review of the whole game on part of the director. The essential factors which tend to make the game, even on a small scale, a success, are a probable and tactically correct supposition, exact and careful consideration and computation of all proceedings by the director, a strictly neutral attitude on his part, which figures mechanically with facts and situations as created by the initiative of the players, and a faculty to develop the whole in a manner so life-like as to cause the players to leave the game with the conviction that in reality things would have happened in just that way.

The claim of the advocates of small bodies of troops in the war-game is that consideration of details is facilitated, that the discussions are more exhaustive, and the game as a whole is more interesting and instructive. The disposal of the three arms and their co-operation, the relations and tactical formations of the single arms in an engagement, the utilization of the ground, in brief, all general doctrines of military science, may be illustrated, they hold, just as interestingly and instructively by the activities of a detachment consisting of one battalion, one squadron, and some pieces of ordnance, as by the manoeuvring with brigades and divisions, whereby details, which to the majority of officers are of the greatest import, are more or less excluded. More recent writers advance the view that the minor problems are left more profitably to active service in the field and that the war-game be reserved to those actions which afford opportunity for applying all the principles of modern warfare and acquainting officers with the elements of strategical science, thus introducing them into what constitutes the highest art of their calling. It is in accordance with this view chiefly that the war-game is played today.

The cartographic material for the war-game on a larger scale is as a rule obtained from publishing houses. Ready-made troop-marks are also for sale. These and a compass and longimeter constitute the necessary apparatus. The course of the game is the same as in the smaller exercises. It is divided into supposition, execution, and discussion and is played under the leadership of a competent director who also acts as referee whenever the services of such an official are required.

The choice of problems and the skill of the director in presenting the supposition and conducting the game are of the greatest moment. The former cannot be selected arbitrarily but must be calculated to fit into a pre-arranged programme. They should also be chosen with due consideration to the particular needs of the various troops and branches of the service. Thus, there should be included demonstrations of the operations and engagements of large bodies of cavalry, the behavior in modern warfare of extended lines of field-artillery, the peculiar conditions of attack and defence of fortified places and positions by foot-artillery and pioneers, the manner in which the crossing of rivers is accomplished, and of other technical work. Of equal importance for all arms is occasional illustration of modes of attack and defence, encounters, contests for a fortified position, outpost duty, replenishment of ammunition, sheltering troops, supplying them with provisions, and sanitary service under the most varying conditions.

The war-game is usually preceded by a brief orientation of the officers present as spectators. This is best accomplished with the aid of a sketch on a blackboard of the operative and tactical situation which forms the starting point for the opposing forces, and by a brief presentation of the problems involved in the game. Next, the actual players are called in. The director begins with picturing for the benefit of both parties the environment in which the game is to develop. He describes the ground under the effects of the influence of the season of the year, weather, illumination and temperature. He recalls to the mental eye the characteristics of summer, for instance, waving fields, shady orchards, mellow, green meadows, dusty highways, woods and forests in full foliage, over which stretches a blue and cloudless sky, or dark clouds presaging thunder-storms and rain; or he pictures late autumn with trees defoliated, fogs hovering above valleys and rivers, and naked heights in the rays of the sun; or perhaps the frosty landscape of winter which has covered the fields with snow and brooks and ponds with ice, and whose

clear and chilly atmosphere tends to relieve distinctly from the background everything that stirs and moves. He further gives information concerning the construction of villages, the practicable state of forests, the width and depth of streams, the nature and condition of their banks and the possibilities and means of crossing; he likewise speaks of the passableness of roads, in a word, of all those matters which are likely to exert an influence on the movement of troops, the effectiveness of arms, perspective, cover, etc.

After all necessary information of this sort has been imparted, one of the playing sides retires while the other is retained, the players being seated around the war-chart. A leader is appointed or elected and he presents to the director a report of the preliminary plans of his side in the preparation of which all his men have co-operated and which is to be made the basis of the game. This report is criticized by the director and eventual changes are made immediately. Next, the allotment of parts is in order, which may be done by either the director or the leader of the side. One officer takes charge of the cavalry operations, a second handles the artillery, a third guides the pioneers, while the remaining players of the side are most suitably reserved for the several bodies of infantry. Since, however, it is well known that the respective leaders of a side profit most from the game, a second officer may be similarly benefited by acting in the capacity of staff-officer or adjutant as counselor of the leader. The duties of this officer would correspond to those in actual warfare. He must ascertain in detail the position of his own army as well as that of the enemy and keep constantly posted in regard thereto; he must take charge of the order, report, and messenger service, call the leader's attention to necessary arrangements concerning the disposal of heavy baggage, trains, sanitary stations, ammunition supplies, and assist him in devising means and giving orders.

Preliminaries being concluded, the director starts the game by choosing a certain point of time up to which the side is supposed to have advanced in accordance to orders without anything of moment having occurred. If patrol engagements are to be avoided, it will usually be the time of arrival of a report which demands a change of previous arrangements or requires new orders. The situation at that particular time is now definitely fixed. The director, for instance, turns to the leader with the words: "The advanced guard under your command has fallen in according to orders at 6 A. M., an advanced guard of cavalry has started at 5.45 A. M. along

the road to the village N. with orders for the time being not to cross the brook P.; it has arrived in that vicinity, according to your computation, about 8 A. M.; personally you have put under marching orders your main body of troops and have then proceeded to its head. At 8 A. M. you have just arrived at the village Z.; with you are your adjutant, the division commander of the first division of the first field-artillery regiment and his adjutant, an orderly-officer and two trumpeters, and there are furthermore at your disposal four orderlies on horseback and two bicyclists. Before I acquaint you with the reports which have just arrived you will place in position on the chart the marching column of your advanced guard as you conceive it to be at 8 A. M." Having done so, the leader is given all messages and reports that are supposed to have arrived for him previous to the time selected as the starting point of the game.

It is needless to point out that the various messages, reports and other communications which, in the course of the game, are repeatedly transmitted by the director to the leaders should, in content as well as in form, resemble closely those of actual warfare. To give full, detailed and precise information would not be war-like. In actual warfare information usually is scant, indefinite, and often unreliable. It is the commander's business to sift the probable from the improbable, the true from the false, and to shape his course of action from his own deductions. Hence, it would not be correct for the director to say, for example: "The Western edge of Pournoy la Grasse has been occupied by two dismounted squadrons," or perhaps, "three batteries of the enemy have been mounted on the height North of the village X." In real warfare the size of an opposing force and the branch of the service to which it belongs as a rule cannot be immediately recognized, and the number of the pieces of artillery and their position remain uncertain until surmised from the frequency and the direction of the firing. Even concerning infantry exact information is not to be had at once. The size of a body has to be estimated from the length of the columns and the time they take to pass a given point, and that although modern facilities for observation are available. For a similar reason, having given all necessary information, the director should not ask: "What do you do now?" This form of question would tempt the leader to answer narrative fashion, invite drawn out discussions and delay the game. The correct way to ask is: "What are your orders?"

The course of the game will therefore be as follows: The

director imparts the necessary information. The leader gives his orders. The leader's subordinates give their orders on the basis of his.

The side then retires and the same process is gone through with the opposing side.

Since the war-game in a way resembles the game of chess, in which first one side moves and then the other side, "the length of the move," that is to say, the period of time which the game may progress without the other side being heard, is a matter to which the director has to give careful consideration. Too short moves delay the game and are apt to tax the patience of players and spectators. Too long moves involve the danger of having to retrace one's steps and to play over part of the game when, for instance, one of the two leaders rightly objects: "I would have known that already at such and such a time and consequently have given the following orders at the fork of the roads." Such objections are not easily ignored.

Briefly stated, the following is to be said concerning the length of the move: The further along the war situation has developed and the greater is the fleetness of troops in motion, the shorter should be the length of the move. This suggests at once that the cavalry war-game demands the shortest moves. On the whole, however, the length of the move will undergo frequent changes in the course of the game. Success depends on the director's good judgment, and that is acquired only by experience.

The discussion of the game at its close by the director assumes most profitably the form of a resumé. Aside from a general review of the question as to whether the solutions of the several tactical problems by the leaders were correct or not, criticism is best avoided. Generally speaking, discussion of topics as the following is in order:

(1) Was the conception of the situation at different points of the game a proper one, and were the subsequent moves appropriate?

(2) Were the orders clear and definite and correct in form?

(3) Did the subordinate leaders give suitable directions and were they justified by the situation?

(4) Were the conditions of the ground sufficiently appreciated?

(5) Was there effective co-operation of the various branches of the service?

(6) Did any serious violations of the regulations occur?

For the rest, what the service regulations say of the manoeuvre applies also to the war-game: The discussion should be of appropriate brevity, without tartness, and objectively instructive. It should never be confined to fault-finding and mere criticism but should always supplement disapproval with a statement of what, in the opinion of the director, would have been the proper mode of procedure.*

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Grundsätze für die Leitung des Festungs-Kriegspieles, mit Beispielen nach der Kriegsgeschichte. By Kunde. Ernst Siegfried Mittler & Sohn, Berlin, 1899. 159 p.

Anlage und Leitung von Kriegspielen. By Hans Oberlindober. Gerhard Stalling, Oldenburg, 1904. 184 p.

* The psychological aspects of the game would form an interesting subject for study. It involves, obviously, the utilization and the bringing to a high degree of perfection of many of the so-called higher mental qualities but, above all, those of memory and of constructive imagination.

RECREATION AND REVERSION *

By G. Stanley Hall

Our age, and I fear most of all my own country, suffers from ever-increasing nerve and brain strain and over-stimulation. Our very schoolboys are told that they may possibly become presidents or millionaires, that theirs is a land of boundless opportunity, while our steamship agencies lure a million immigrants to our shores annually by iridescent suggestions of easy wealth. Our mails are crowded with the attractive schemes of promotors of "get rich quick" schemes. Roosevelt's precept and example are summed up in the gospel of strenuosity. Work hard, think intensely, be a striver or climber and you will arrive, and "Nothing is too great to be attempted," is our slogan. Ours is a young man's land. Osler's jest that at forty every man should choose between chloroform and a Carnegie pension is often taken half seriously. It is hard to retire from business, and grow old with Ciceronian dignity, and while we know much of adolescence, the psychology of senescence is with us least understood practically or even theoretically. Specialization everywhere, which requires a man to spend his life, for instance, on one of the more than forty different processes involved in making a shirt or a shoe, not only makes Legge's "Thinking Hand" impossible, but condemns a workman to be always a fractional part of a man. Such popular catch words may serve to suggest our growing horror individually and collectively of inferiority, *Minderwertigkeit*. Now, too, we have the so-called "efficiency movement," a culmination in the field of industry of acute Americanitis, set forth in the gospel of greatest results by least effort by Taylor, Gilbreth, Emerson, Scott, Shadwell, Dresser, Marden, Davenport, Roester, Cadbury, Brisco, Goldmark, Schultze, and of course by Münsterberg, who writes equally well on every subject, also the Tuck School studies and many others.

These people analyze the processes, *e. g.*, of laying a brick,

* This paper is here printed without change, as it was prepared to be given in German at the IV. Internationaler Kongress für Volkserziehung und Volksbildung, in Leipzig, September 25th to 29th, 1914. At the outbreak of the war the congress, the program of which had been completed, was abandoned, and so the address was not given.

eliminate stooping, which involves lifting each time forty pounds of their weight through an average of twelve inches, by movable platforms, reduce the number of movements for each brick from seventeen to seven or even to five, and thus more than double the number laid per hour or day, and at least relatively diminish fatigue and increase the wage. By similar studies of the loading of pig iron onto cars, a workman who before normally loaded twelve and a half tons now loads forty-seven and a half tons per day with proper intervals of rest, lifting and carrying his burden in the right way, pace, and rate. Coal-heaving is analyzed, and the effort found to be most economical with an average shovelful of about twenty-one pounds. So, too, the size, weight, mode of use of common tools like the axe, scythe, saw, hoe, rake, and other modes of unskilled labor are analyzed. There are also new methods often carried into great detail in keeping accounts, with daily footings with a view to reducing the number of the some eleven thousand business failures per annum. Thus the effort is to find in every department a standard of day's work, a man-power. There are also standard types of business, municipal, school, and even university organization. Others would standardize cultural processes and methods, and yet others have proposed standard legislation on a great variety of subjects. Our students are exhorted to maximize their efforts, to study and think intensely, and James would have us all cultivate a higher and more dynamogenetic erethic second breath method of work. Time is money and only by toil with utter abandon can we rise above mediocrity and think and act our best.

Thus with us the struggle for social and even physical existence is ever harder. Competition compels us more and more to draw upon our reserve energies to succeed, and with every increasing year of age the over-stimulated hopes and ideals of childhood and youth have to be abandoned. Instead of the noble mansions youth had dreamed of building for his soul, the adult finds that he must accommodate himself to a cottage or a hut, and so *Angst* and worry gradually supervene and many succumb to neuroses or psychoses or take "flight from reality" in the sense of Freud, or feel their own incompleteness in the sense of Janet, or their *Minderwertigkeit* as Adler has characterized it. Thus industrial, social and physical causes combine to favor neurotic symptoms, for we Americans perhaps more than any others suffer from nerves, so that not merely the term neurasthenia but the disease is an American product. Certain psychopathologists are now telling us that the phobias, obsessions, delusions, imperative ideas,

and even reveries and dreams, are reversionary to childish states, or realizations of its repressed wishes, and that most diseases with nervous complications are reminiscent, not only of childhood, but of the phyletic stages of man's development and that just as exhaustion reduces immunity from morbific germs, which have always perhaps been man's chief foe, so loss of courage or sense of failure make him more vulnerable to all the agencies fatal to the individual or the stirp.

This preamble brings me to my thesis today which is that there is a normal form of reaction to the ever more urgent demands of modern life, a healthful type of flight from reality or the *devoir* present which has received too little theoretical or even therapeutic consideration, and that is found in recreation. But the point I wish especially to stress is that nearly all forms of it are reversionary in the sense that they involve falling back to activities that are older than modern civilization and appeal to lower strata or neuro-muscular response, and that they strengthen and refresh us by awakening processes and propensities long dormant, or, in other words, that sport, play and amusement are older than work and involve more generic activities of body and mind and thus are truly re-creative and re-generative.

To illustrate: one of the first movement types is striking with a stick, which was the first tool and did much to make man man. To swing the distal end of a stick swifter than the arm through a larger arc and thus with greater momentum to relieve the hand or fist from the pain of impact, and third, to hit with a harder, heavier, and perhaps sharper point than the hand or fist could do, gave an immense advantage which no animal ever attained. This helped man to become lord of creation. If not the Java man some probably earlier *pithecanthropus erectus* added to the advantage of being upright that of being the hitter whose blows were formidable to all animal and human foes, and this also gave him great power over inanimate nature. The far end of the club soon became armed or weighted and from it evolved the axe, hammer, and all tools, weapons, and implements that pound or beat, strike or hit, including not only the broadsword, but the whip, and with all these multifarious instruments with which the hand was armed there was also evolved a strong *praedeterminierende Tendenz* to use these on every occasion, fit and unfit. This *Trieb* is abundantly illustrated in children. Russell observed a boy of thirteen months who struck his tin plate at the table with a spoon fifty-seven times in a minute and a quarter, and many toys are used and broken in this way, while also many observers of children report this strong

propensity to use anything they can handle to strike with. So, too, for youth this makes a specific ingredient of the charm of baseball, cricket, polo, tennis, hockey, Lacrosse and many other games in which older men find recreation by reversion, and the fascination of the bat, mallet, putter, are due to the fact that they enable us to turn away for the nonce from the gruelling hard push-up against reality and to relapse or retreat from it and to resurrect ancient phyletic propensities. The stick principle has a general symbolic embodiment in the sceptre and the mace, while rhabdomancy is a reverberation of a man's pristine sense of this new source of power. So when primitive man first learned to throw by swinging a stone or other missile as rapidly and through the arc of as large a circle as his arm could describe, and then letting it go at the point of most rapid motion, this first material form of action at a distance marked another step in man's dominion over nature, and from it evolved all the arts of the boomerang, spear, sling, and then in due time came the bow, of the early use of which modern archery is reminiscent, and the arrow, and the elaborate ritual and folklore with which every stage of its manufacture and use is spun about, and then the advent of gunpowder and the science of ballistics. All studies of children that have given attention to this subject show that many boys pass through a stage in which throwing is a passion which even their respect for property and persons is unable to control, and they must throw at anything and anyone in sight. This ancient impulse has been an important constituent or interest generator in many games and sports, particularly in the manifold uses of the ball, or quoits, putting shot and hammer, billiards, in knife and boomerang throwing, and also again in polo, tennis, cricket and the rest. Modern football is perhaps the most primitive and may become the most savage of all modern games, particularly in the scrimmage or melee. It has been defined as a prize fight multiplied by eleven. The spectators, too, relapse and perhaps yell and dance like aborigines. The issue of the game is of little import and has no relation to the life of the spectators, but the emotion is intense and suggests gladiatorial combats in the arena. Habitués on the bleachers often say that the charm of the game is that it is bloody and that it makes other games seem tame in comparison.[1]

[1] I have been most of all indebted to Professor G. T. W. Patrick, who seems to me to have the best and clearest conception of anyone I know of the nature of play. See his The Psychology of Football. *Am. Jour. of Psy.*, July, 1903, Vol. 14, pp. 368-81. The Psychology of Play. *Ped. Sem.*, 1914, Vol. 21, pp. 469-84. The Psychology of Relaxation. *Pop. Sci. Mo.*, 1914, Vol. 84, pp. 590-604.

The principle of the string, although its perishable nature has left us few traces of it, must have been another and very early discovery of prime import. From rushes and tendrils on up through flax, wool, cotton, the art of spinning, weaving, knitting, braiding twine, rope, chains, knots, loops, even string languages like the Peruvian quippu, stringed instruments, wire, etc.—all these were sprung from the first tie that binds units to unity, and Acher [2] has gathered copious illustrations of the string passion in children and shows how extensively it enters into their plays, games, and toys.[3]

Again, primitive man fished for food or profit like fishermen now, but modern man does so for sport. One pleasant summer holiday a New York newspaper sent out its reporters to estimate the number of boys and men who were fishing off the docks that completely surround that city, and the census showed some twenty-four thousand thus engaged. About three-quarters of them were out for fun and not for fish, for they often threw back their catch or gave it away, but they were lured to this occupation by the call of the wild or of the hereditary instinct in their neurones, and went home at night rested and refreshed by the recrudescence of an old racial habit. To feel the throb and thrill of a nibble on the hook, to see the float drawn down under, or to pull up even a minnow from its element, and especially to play with a good sized gamy fish that fights well and at last to land him, owes its fascination in no small part to the fact that formerly in the history of the race the satisfaction of the cravings of appetite was thus anticipated. Now the fisherman may sit for long hours without a bite and go home refreshed and rested because he has revived and felt, unconsciously though it be, a fragment of the ancestral life of the race. A New York psychopathologist often prescribes fishing for his overwrought business professional patients and we are told with good results.

In a study of dolls among the various ages and races of men, Ellis and I [4] found that only a minority of them represent babies, while more are figurines of adults reduced to fit the dimensions of the child mind and that in many primitive races dolls are often idols representing gods and heroes, so

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[2] R. A. Acher: *Am. Jr. of Psych.*, Jan., 1910. Spontaneous Constructions and Primitive Activities of Children Analogous to Those of Primitive Man.

[3] K. Haddon: Cats' Cradles from Many Lands. New York, 1911, p. 95. L. Gulick: Interest in Relation to Muscular Exercise. *Am. Physical Educational Review*, June, 1912.

[4] A. C. Ellis and G. S. Hall: A Study of Dolls. *Ped. Sem.*, 1896, Vol. 4, pp. 127-75.

that the charm they have for childhood is complex and is yet not entirely understood. The surprise in this study was to find that children's interest was so often fanned consciously and unconsciously by that of adults, and that so many women, young and old, conserve and play with dolls very secretly and alone perhaps through all their lives. We have already a small, but interesting anthology of cases where doll play has been prescribed for neurotic and psychotic female patients with apparently good results.

In all active competitive sports, horse and boat racing, foot and base ball, and the rest, the tension of all spectators is very great, for man has always had to struggle with his fellow men for survival, for booty, and for women, and perhaps from the latter's greater interest in the issue man has inherited some of his zest for looking upon conflicts. The best man must win and the acclaim always awaits the victor, while the vanquished is a negligible object liable even to insult and injury. In such modern contests the main issues that hang upon the wager of battle are of very slight significance and our zest in it now is because of old the prize was not formal or trivial, but most vital issues were at stake. Thus there has been a *Verschiebung* of the ends to the means; indeed every drama and romance pivots on a conflict ending in the triumph of one and the defeat of the other force or person, and the zest of it all is that the conflict is more intense and the issues are more clearly drawn and palpable than in real life about us. Here all ends well, and we are refreshed because the primal emotions of our forbears in us have been relieved for a time from every impression and allowed to irrigate our entire psychophysic nature.

In many American and English schools boys fight each other and each knows who can whip him and whom he can whip. Prohibition and even Parliament cannot stop it, and it is often considered by the authorities as making boys mettlesome. In witnessing great pugilistic contests, which I sometimes permit myself to do as a student of human nature, the three surprises are, first, my own tense and absorbing interest that makes me want to shout and yell like a wild Indian as the rest do and perhaps leap into the ring; second, a kind of cathartic refreshment after the brain-storm, which like a thunder-storm clears the air; and third, that I see so many other respectable people there whom I know, but who do not wish me to recognize them. Estimates of the number of those present at the Circus Maximus in ancient Rome to witness the encounter between man and man, or men and animals, vary from two hundred thousand to four hundred

and eighty-five thousand. So in bull fights, wrestling matches, Marathon and all other races, and all the countless contests for championship and every kind of competition to see who is the better man and boy, the Jesuit appeal in the schools to emulation and rivalry, the strange stimulus of having a racer or speeder in practicing for running or bicycling, prizes, even in the medieval wager of battle and in modern war we have the same excelsior passion to overcome, the stimulus of which makes the nerves tingle and brings calentures to the blood. Why? Universal peace, harmony, and accord would make this a dull and stagnant world. Man has always been a fighter and his passion to kill animals which our game laws try to protect, and inferior races, as illustrated in the complete extinction of the Boethucks and Tasmanians, etc., is the same thing which perhaps in the dark past so effectively destroyed the missing link between the great fossil apes of the tertiary and the lowest men of the Neanderthal type. All these illustrate an instinct which we cannot eradicate or suppress, but can best only hope to sublimate.

Again, speed is perhaps another genetic category on which once safety from pursuit and capture, and also the power to overtake enemies depended. Speed is no longer necessary for survival, but in scores of plays and games success depends on superiority in running, leaping, dodging, while fast riding or sailing and the speed mania of autoists, driving, motoring, flying, all show that it has now a charm as an end in itself and not a means. How shall we explain the exquisite exhilaration of being swiftly borne through space, along roads, in trams, on the aeroplanes? This *Trieb* may be complicated with the instability of our shifting population, shown in the rapid rise of the curve of movings in the spring, which almost suggest seasonal migration, illustrated in an extreme case of a girl of thirteen in St. Louis whose parents had moved eleven times, so that she had attended as many different schools since she entered six years before.[5]

I have no time to speak of tops, kites, marbles, finger-, guessing-, circle-, counting-out-games, tag, gangs, and other spontaneous social organizations often very elaborate (Philadelphia having ninety-three rather lawless organizations of boys with some features of savage tribes), jumping the rope, forfeits, the jack knife and whittling, bowling, knuckle bones, and the other seven hundred other plays collected and described by Mr. Johnson;[6] nor to discuss toys, nor describe the

[5] Luther H. Gulick: Physical Education by Muscular Exercise. Phila., 1904, 72 pp.

[6] G. E. Johnson: Education by Plays and Games. *Ped. Sem.*, Oct., 1894.

recent strange revival of Morris dances in England, the uses of masks, and the passion of impersonating other people and animals, the children's theatre, story telling, the perennial charm of the country, the forest, the shore, tenting, scouting, and the many games of chance, and with cards which were once used for divination, and the gambling instinct, and now the moving picture seen by millions daily, 95% of which are censored and the culture possibilities of which almost rival the invention of printing.[7] When we analyze all these into their elements we find that they hark back to primitive or pre-historic life. Chicago spent eleven million dollars on playgrounds and their accessories in two years, and New York City up to 1908 spent fifteen million, and there are now twenty-four thousand supervised playgrounds in the United States employing 16,318 professional leaders and supervisors. Many places have probibited the use of certain streets and they are set apart for play. Juvenile court records show the helpful results, and one enthusiast at a meeting of teachers said with applause, "Better playgrounds with story telling and folk dances without schools, than schools without playgrounds." The fact that in a land where work is so hard and business so exacting amusements and pastimes have had this sudden and amazing development, presents a challenging problem. Although we have countless studies of special plays, games, and toys, and much speculation, we have as yet no satisfactory psychological theory of what play means and what it does, and my own modest contribution here consists merely in the suggestion that if ever we have one, it will regard play as for the most part regressive.

Sleep is, in a sense, a relapse to an infantile state, and is not without certain analogies to foetal life, and dreams sometimes realize childish wishes abandoned in the waking state. Laughing and crying are autistic and low level functions expressive of pleasure and pain, while revery and day-dreams are quasi relapses to mythopoeic stages of mentation. Even religion is resignation to a higher power interpreted, because of the objective habit of consciousness, as outside of us. It means trust and dependence. We let go and are sustained, and we cease to strive, or desire to yield to a potence not ourselves. We retreat from the intellect, which is a racially new and individual achievement, to feeling and emotion, which are racial and older. Many nervous and cerebral diseases, and even old age itself, are essentially recessional and the fluctuations of feeling well or ill, euphorious or disphorious,

[7] The Standards of the National Board of Censorship of Motion Pictures. May, 1914.

do much to determine whether we are alert, keen, and intent on the world's work, or turn our backs upon it for the nonce. Thus our life is on a genetic plane, the top symbolizing the gospel of strenuosity focusing in the efficient man with action, attention, volition, and the maximum of effort, while the bottom stands for automatic, spontaneous, reversionary states and acts, from play and recreation down to passive relaxation and even waking or sleeping dreams. Not only individuals, but races and nations, show rhythms of progress alternating with stagnation and even regression, mental and moral, and at the extreme are crazes, now for amusement, and now for the most energetic work.

Why is recreation re-creative? It is because the *Verdrängung* of life intermits. From the genetic point of view, growth from childhood to maturity means habituation, limitation, specialization, and the child is not only ages older, but more generic than the adult. It, like woman, is a better representative of the race than the adult male. Development is in certain directions along definite *Leitlinien* only, and on other's potentialities the Wordsworthian shades of the prison house close in. The child's life is more feeling and less intellect, and feeling is more generic and less individual. The forms of industry change and grow more special, but the cardinal forms of play and toys, the rattle, doll, ball, the club, tag, games of chance, are the same now as in antiquity for savage as well as civilized children. Froebel said, "Man or child is whole only when he plays." In play we revive and rehearse old types of industry, unleashing primitive emotions, activate phyletic thought forms, fall back on older, better organized, and saner strata of psychophysic impulsion, and reanimate and reeducate ourselves, and revive old proclivities, which suggests revisiting man's lost paradise, assuming an old, happy *Stellungsnahme* to the world. Play is thus a liberal humanistic culture. It repeats in an adumbrated way the activities of the phylum. In it we are no longer intent upon the end, and there are no issues of life or death at stake, but the joy is in the activity itself, and the prize is fictive or trivial. Of old, many plays and games were sacred to the dead, and all might be so to the cloud of witnesses from far back in man's evolutionary history. For one fatigued by the hard push-up against reality, which labor requires, and who has to retreat from it, it is fortunate if he can do so in this healthful way of play, and not worry and grow neurotic, for it must be one of the two. Thus play is a refuge, a hygienic resource, a release. It means rejuvenation, even from old age. It is a safeguard against psychoses by an Antaeus-like

touch of the individual with his phyletic background. Play does prepare for life, but this function of it is secondary and incidental. It does so by putting the individual in possession of the rich potentialities of his heredity, which would otherwise slumber or decay in him, and in this function lies the partial truth of Spencer's theory of spontaneous activity, for we do have an immeasurable source of impulsion in us upon which to draw. Thus play does far more than to vent or drain, and the catharsis theory is inadequate because play also increases energy.

We are a nation of hard workers, and business, too, has become almost an obsession. But now vacations lengthen, holidays increase, the hours that constitute a day's work are more and more restricted by law, employees take little interest in their work, and loaf, shirk, and "sojer." Once we had a strong Puritan rancor against amusement, if not against happiness itself. Our parents stayed at home and kept busy. Now we have become great travelers, making constant outings, excursions and tours, incessantly visiting expositions, fairs, spectacles; and statistics show that we are per capita the greatest theatre goers, game and sport fans and rooters in the world. In our recreation we are prone to seek, not the highest, but to fall to a rather low culture level of mere amusement and diversion, and comedy or roaring farces are far more popular than tragedy or society and problem dramas. We want relaxation and escape from the ever more gruelling day's work, and are alternating from the hard to the easy life. We hope that all these rest cures will bring us regeneration and not degeneration. Our problem is, how can a nation suffering so acutely from over-work that the older families, save in the South, are rapidly dwindling toward extinction, recuperate itself and become again ascendant and fecund? We have a pragmatic, if not even conscious belief that by going back and restoring in ourselves all possible elements of racial childishness, and rehearsing its joys and sorrows, its activities of body and states of mind, we are really resting the higher cerebral centers of the neo-palium and backsliding to paleo-atavistic functions by recurrent oscillations up and down the phyletic ladder of psychogenesis. Even our academic student life, as Sheldon has shown, abounds in abject banalities and licensed sillinesses, as if by an instinct to keep the way open back to infantilism and its wellsprings of life, or as if to compensate, individually and racially, for the fact that we tend as no other nation ever did, to lose sympathetic touch with childhood, and also to compensate for the fact that our history is brief by reverting to and restoring in our own lives

the early and lost stages of man's evolution. Little as we understand all this scientifically, may it not, at least in some sense, serve to explain why a nation that combines so many of the best of the aggressive traits of mankind and has contributed so much to racial progress on the practical side, also combines with all these advanced traits so many that are very primitive and reversionary, and which ought to be recessive? In early days we learned only too well the lesson of incessant and severe toil. Now we are learning how to play, and because this is new and we so need the restoration it brings, we overdo it. Some of our recreation halls and centers are inscribed with the motto, "He works best who plays best," and perhaps the evolutionary interpretation of this motto which we have suggested gives it a far deeper theoretical and practical significance than we yet realize.

AN INTERESTING SEX DIFFERENCE[1]

By Edward K. Strong, Jr., George Peabody College for Teachers

Differences in the mental life of the two sexes have always constituted an interesting topic for discussion. Very much has been said on the subject. The general conclusion of nearly all writers in the past and almost all even to-day, has been that there were very great mental differences which must be apparent to all. But when these supposedly striking differences in mental attributes have been subjected to careful experimental study, the one surprising result has been that there is no particular difference discernable between the two sexes.

I cannot recall an experimental study which has given evidence of any really significant difference in any mental function between men and women.[2] The differences which have been found have been but slight ones—such as a greater ability in most kinds of memorizing for women and a greater ability in many kinds of reasoning for men. But after all, these differences have been but a few per cent of the total scores.

In my study of the relative merit of advertisements in 1911, the interesting fact came out that women were very much more easily aroused emotionally while looking over a set of advertisements than were men. In one experiment the subjects were required to arrange some soap advertisements in an order of merit according as the advertisements made them want to buy the soap. Having done this, they were questioned concerning their attitude towards the advertisements, —the questioning being directed toward finding which, if any, of the advertisements had no appeal for them. If there was any, it meant that the advertisements placed above these "zero" advertisements were increasingly more persuasive and the advertisements placed below them were increasingly more distasteful. The results show that the average man placed no advertisement below this point of indifference while the

[1] Read before the Conference on Individual Differences in celebration of Professor James McKeen Cattell's twenty-fifth anniversary as Professor of Psychology at Columbia University, April, 1914.

[2] An unpublished study by H. A. Ruger shows a quite clear difference between the two sexes with respect to solving mechanical puzzles.

average woman placed 13 of the 50 advertisements below it. I was content at that time to explain my findings by simply stating that the results show that "women have more and greater dislikes than men and are surer of them." [3]

This striking difference in attitude toward advertisements has appeared again and again in my work. A peculiar phase of it has been that although women know instantly that they don't like an advertisement yet very seldom can they give a reason for their dislike. They are certain of it, but they don't know why. This was strikingly illustrated with a series of five General Electric Tungsten Lamp advertisements.[4] Toward one of these advertisements I obtained from many women a decidedly antagonistic attitude; but not a single man showed any such feeling. Finally, after a great deal of questioning it appeared that probably the dislike was due to the drawing of the child held in a mother's arms. The forehead and short curly hair suggested to some a negro child. The illustration to the advertisement, then, was not appropriate, presenting, as it did, a white woman holding a negro child in her arms. I can not be sure that this was the cause of the antagonistic attitude of all the women toward the advertisement. It seems as though it was the cause in several cases, and possibly was the cause in the remainder. In no case, as far as I know, did the woman realize this inappropriateness at the moment of expressing dislike for the advertisement. Only after some time did this incongruity come to mind. And when it did come to mind it neither added to nor detracted from the then present attitude of dislike for the whole advertisement, at least, as far as I could determine.

This experience, coupled with others of a like nature, suggested that women were often markedly influenced by details which were not consciously considered at the moment. Possibly, then, women saw in a situation more details than did men, and so realized a lack of harmony more often than did men, because they were influenced by the greater interplay of one detail with another.

Further light on this interesting point has come as a by-product from an experiment which was run for an entirely different object. And because it is a by-product the results are all the more significant in that not even the experimenter had the least glimmering of the facts until after the data had been computed.

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[3] E. K. Strong, Jr.: The Relative Merit of Advertisements, 1911, p. 79.

[4] E. K. Strong, Jr.: Psychological Methods as Applied to Advertising, *Jour. of Educ. Psychol.*, Sept. 1913, 393-404.

In this experiment 25 full-page advertisements from the October, 1911, issue of *Everybody's Magazine* were shown one after the other to the subjects. The subject was then supplied with a pile of sheets of paper, on each of which appeared a piece of an advertisement. The test consisted in seeing to what extent the subject could correctly pick out the various details that had been present in the 25 advertisements. There were 291 such portions of an advertisement—133 being portions of the original 25 advertisements and 158 being portions of 25 other new advertisements. As the subject came to each sheet he assigned it to one of four piles—the first pile represented 100% confidence that this piece had been seen among the 25 original advertisements; the second pile represented 75% confidence—*i. e.,* reasonable certainty, but not such certainty as that to which one would be willing to swear; the third pile represented 25% certainty—*i. e.,* a feeling that possibly it had been seen, but with no great confidence in the decision; and the fourth pile received the remainder—*i. e.,* those pieces the subject was sure he had not seen, together with those he didn't know anything about. The pile represented a lack of any feeling of familiarity toward the piece.

Two different methods of presenting the advertisements were used. With the first method the 25 advertisements were shown at the rate of one per second. With the second method the 25 advertisements were given into the hands of the subject and he was instructed to look them through at his own leisure.

Forty individuals were tested by each method,—twenty men and twenty women. The forty women were entirely composed of students in psychology in Barnard College or in the Summer School of 1912. The forty men were likewise interested in psychology but they ranged from college students, through graduate students, instructors, etc., up to full professors. The age of the women on the whole was less than that of the men and the variability of age for the women would be considerably less than that of the men.

Turning now to the results, we see in Table I that the women did markedly better in both tests than did the men. In the test where the advertisements had been shown at the rate of one per second the men remembered 13.8% of the pieces, while the women remembered 20.8% of the pieces. The women did then 51% better than the men. When the variabilities of the two groups are considered it is apparent that the chances are 993 to 7 that this is a true sex difference. In the second test where the advertisements were looked

through at the leisure of the subjects, the men remembered 27.1%, while the women remembered 41.3%. The women did here 53% better. The chances here are 998 to 2 that this is a true sex difference.

Evidently then, when the two sexes are allowed exactly the same time to look at a set of advertisements or when they are allowed to look at the advertisements in their own way, the women do actually see 50% more details than do the men.[5]

But an objection may be raised to these results on the ground that these particular 25 advertisements were of commodities much more interesting to women than to men and so would naturally contain more details which would be noticed and remembered by them. The facts, however, do not support this contention. Six of the advertisements were of commodities used only by men, seven were of commodities used only by women, while twelve were of commodities used by both. Of the twelve, three were primarily for men and one for women. The commodities were then about as equally divided between those appealing to men and women as it would be possible to obtain.

Still more conclusive evidence we have from an experiment with these advertisements in which forty other men and women were tested. Here the advertisements were shown at the rate of one per second and the subjects were tested as to their ability to recognize the 25 advertisements from a pile containing the 25 and 25 other new advertisements.

Table II shows that the men recognized 74.8% and the women 74.3%. Here the men have done less than 1% better than the women.

Still another experiment shows that not only were these particular 25 advertisements not more interesting to women than to men but that in daily practice women are not interested in advertisements in such a magazine as *Everybody's* to anywhere near the extent that men are. In 1911 and 1912 some 300 odd men and women were supplied with copies of this issue of *Everybody's* and were requested to read Professor W. D. Scott's article on "Habit" which appeared in it. In every case the individuals were given the magazine by someone else than myself and none of them suspected that the advertisements in the magazine were of any interest to them. After having had the magazine in their possession one week and having read at least this article, 137 women and 80

[5] This difference is truly one between men and women as we find them today. To what extent it is due to their inherent capacities and to what extent it is due to their differences in training is unknown, of course.

men were tested as to the advertisements which appeared in the magazine. Table III shows that the average man remembered 9.4% of the 77 full-page advertisements in the magazine while the women remembered but 4.1%. The ratio here is 100 to 44 in favor of the men. If we consider the results from the 25 advertisements which were used in the previous experiments we find that the average man remembered 11.2% of them, while the average woman remembered but 5.4% of them. The ratio here is 100 to 48. (The reason why these 25 advertisements were better remembered than the other 52 among the entire 77 is due to the fact that they occupied all the preferred positions in the magazine.)

Now what do our several experiments show? They indicate, first of all, very clearly that the 25 advertisements under consideration are noticed in daily life only about half as often or half as well by women as by men. Second, when men and women are afforded identically the same opportunity to notice these advertisements they can later recognize the advertisements equally well. And third, when men and women are afforded equally the same opportunity to look at these advertisements the women can later correctly identify 50% more details as having been in the advertisements than can men. And this fact holds true regardless of whether the individuals see the advertisements for the same length of time, or see each advertisement as long as they wish. Women, undoubtedly, then, are conscious of more details in advertisements than are men.

Accepting this fact as proved, what are some of the implications? It has occurred to the writer that possibly some of the differences between men and women in memory work may be due to this superior ability of women to note more details in the objects of study. For example, if while learning a series of nonsense syllables a woman can not only pay attention to the syllable as a whole, in the same way that a man does, but can also pay a little more attention to the letters making up the syllable, this additional information could easily explain the slight superiority women show in such work. And on the other hand, in tests of reasoning we might explain woman's slight inferiority as due to her being bothered to a greater extent with details which are not germane to the work in hand.

Whether there is anything in such a speculation or not remains to be proved. But it is not at all improbable that such might be the case. The present attitude of investigators concerning good and bad spellers is one in which good spellers are thought of as being attentive to more details in the words

than bad spellers. If the grasping of more details distinguishes the good speller from the poor one, why not extend the conception to memory work in general?

As the emphasis in this series of papers is upon individual differences rather than group differences, I have added some data from these tests concerning individual differences. Tables I and II present the figures. The range of performance is large, but neither sex can be said to have a greater range than the other for all the three tests. Cattell and most of his students have found that individual ability within a tested group varies as about 2:1. This holds true here with regard to recognition of whole advertisements but is not at all true with regard to recognition of details of advertisements. The ratios in the test where the advertisements were shown at the rate of 1 per second are in round figures:—

Men.	9 to 1
Women.	7½ to 1
Total.	14½ to 1

And when the advertisements were seen at the subject's leisure the ratios are:—

Men.	14 to 1
Women.	3½ to 1
Total.	15 to 1

The extremely high variabilities when both men and women are considered together can, of course, be explained as due to two overlapping distributions, as is the case. But the variabilities of the men under both methods of presenting the advertisements is very great and of the women also, in the case where the advertisements were shown at the rate of 1 per second.

TABLE I

Showing (1) The per cent of *details* of advertisements which can be recognized immediately after seeing the advertisements.
(2) The range of individual records.
(3) The range expressed in terms of the probable error of the distribution.

	Advertisements shown at rate of 1 per second			Advertisements shown at leisure of subject		
	20 men	20 women	Total	20 men	20 women	Total
Average per cent recognized.	13.8%	20.8%	17.3%	27.1%	41.3%	34.2%
Probable error of average. ..	*0.9*	*1.7*	*1.0*	*2.4*	*2.4*	*1.9*
Ratio.....	**100**	**151**		**100**	**153**	
Range, best record.....	26.5	42.6	42.6	56.7	62.1	62.1
poorest record.....	2.9	5.6	2.9	4.1	17.9	4.1
total range.....	23.6	37.0	39.7	52.6	44.2	58.0
ratio, best to poorest.	**9.1:1**	**7.6:1**	**14.7:1**	**13.8:1**	**3.5:1**	**15.1:1**
Range expressed in terms of the P. E. of the distribution, i.e.,			*6. 5*			*12.0*
greatest plus deviation .	+1.4	+3.9	+3.9	+1.9	+2.3	+2.3
greatest minus deviation	—2.2	—1.8	—2.2	—2.5	—1.4	—2.5
total range.....	3.6	5.7	6.1	4.4	3.7	4.8

TABLE II

Showing (1) The per cent of *entire* advertisements which can be recognized immediately after seeing the advertisements
(2) The range of individual records.
(3) The range expressed in terms of the probable error of the distribution.

	Advertisements shown at rate of 1 per second		
	20 men	20 women	Total
Average per cent recognized	74.8%	74.3%	74.6%
Probable error of average	*3.0*	*2.2*	*1.8*
Ratio	**100**	**99**	
Range, best record	100.0%	96.0%	100.0%
poorest record	54.0%	40.4%	40.4%
total range	46.0%	55.6%	59.6%
ratio, best to poorest	**1.9:1**	**2.4:1**	**2.5:1**
Range, expressed in terms of the P. E. of the distribution, i.e., *11.1*			
greatest plus deviation	+2.3	+1.9	+2.3
greatest minus deviation	—1.9	—3.1	—3.1
total range	4.2	4.0	5.4

TABLE III

Showing the per cent of advertisements that can be recognized when they are displayed in *Everybody's Magazine*, after the subject has read at least one article in the magazine and has had it in his possession one week, but has never thought of being tested.

	All the 77 full-page advertisements being considered		Only the 25 advertisements being considered	
	80 men	137 women	80 men	137 women
Average per cent recognized	9.4%	4.1%	11.2%	5.4%
Ratio	**100**	**44**	**100**	**48**

THE MENTAL HYGIENE OF EXCEPTIONAL CHILDREN

Lewis M. Terman, Stanford University

The purpose of this article is to present some data on the relation of school success to intelligence, and more particularly to raise the question whether the treatment of exceptionally intelligent and exceptionally dull children in the grades has proper regard for the actual mental capacity of such children.

The data to be presented are some by-products of a study of the school success of 1,000 non-selected school children who were tested in 1914-1915 by the Stanford revision of the Binet-Simon measuring scale of intelligence.[1] Those tested comprised all the children of all ages within two months of a birthday who were enrolled in the schools where the tests were made, and the subjects were therefore as nearly representative of the different ages as it was possible to secure. They included approximately one-third of the children enrolled, and we have no reason to suppose that if the other 2,000 not within two months of a birthday had been tested the facts for them would have differed materially from those we have found.

The mental age of each child was computed according to the Stanford revision of the Binet scale and comparisons were made between intelligence quotient and school success as indicated by three criteria: (1) The quality of the school work as judged by the teacher on a scale of five ("very inferior," "inferior," "average," "superior," and "very superior"); (2) Grade progress; and (3) The teachers' estimates of the children's intelligence. Intelligence, like school success, was also estimated on a scale of five. The present discussion will deal chiefly with the correlation between intelligence quotient and grade progress.

We have made this comparison for the entire number of children, but since there is little opportunity for children below 8 years to become retarded we have included in the following table only those with a mental age of 8 years or more.

[1] The Stanford Revision, with analysis of data from 1,000 cases, will be published as a joint monograph by Terman, Ordahl, Lyman, Galbreath and Talbert.

Grade II is regarded normal for mental age 8, grade III for mental age 9, etc. The 8 year mental age group includes all mental ages from 7 years 7 months to 8 years 6 months, and so on.

TABLE I

SHOWING GRADE DISTRIBUTION OF 676 CHILDREN BY MENTAL AGE

MENTAL AGE	GRADE										
	I	II	III	IV	V	VI	VII	VIII	H.S. I	H.S. II	Total
8	25 25.5%	55 56.6%	18 18.4%								98
9	4 4%	24 24.5%	48 49%	19 19.4%	1 1%	1 1%	1 1%				98
10		4 3.8%	30 28.5%	49 46.6%	15 14.2%	6 5.7%	1 .9%				105
11			6 7%	20 23%	38 44.6%	17 20%	3 3.5%	1 1.2%			85
12			1 1%	8 8.3%	19 19.8%	40 41.1%	16 16.6%	12 12.5%			96
13				2 2.6%	7 9%	29 37.5%	19 24.3%	21 27%			78
14			1 1.5%		4 6%	21 31%	16 23.5%	26 38.2%			68
15						5 14%	10 28%	21 58.5%			36
16						2 16.7%	1 8.3%	9 75%			12
											676

The above table shows that nine-year intelligence is found all the way from grade I to grade VII, inclusive; ten-year intelligence from grade II to grade VII, etc. Twelve-year intelligence, which here ranges from grade III to grade VIII, would doubtless have been found in high school also if tests had been made there in any considerable number.

Table II shows the number and per cent who, according to mental age, are retarded or accelerated in school, 1, 2, 3 or 4 years. The table includes only the mental ages 8 to 16 inclusive.

TABLE II

SHOWING AMOUNT OF ACCELERATION AND RETARDATION IN THE GRADES USING MENTAL AGE AS THE BASIS

	Grade below mental age				Normal grade for mental age	Grade above mental age				Total
	4 yrs. or more	3 yrs.	2 yrs.	1 yr.		1 yr.	2 yrs.	3 yrs.	4 yrs.	
Number	4	13	69	184	275	106	22	3	1	676
Per cent	.52%	1.9%	10.2%	27.2%	40.6%	15.6%	3.2%	.44%	.16%	

It may be pointed out that, after the age of 7 or 8 years, misplacement by one grade is not especially significant, as that could easily happen from any one of a number of causes such as early or late entrance, illness, a little more or a little less than average industry, etc. But in 112 cases, or nearly 16% of all, there is a misplacement of two grades or more, Eighty-five of these, or over 12½% of all, are cases of grade retardation below mental age; and 26, or nearly 4% of all, represent grade acceleration beyond mental age. It is interesting to note that school retardation of two years or more (reckoned on the mental age basis) is about three times as common as acceleration of two years or more. On the basis of chronological age the proportion of grade acceleration to grade retardation is even less than this.

Our present task, however, is to find an explanation of the rather surprising disagreement between grade progress and mental age. Taking up first the 26 children whose grade status is two or more years ahead of their mental age we find that 19 of these are by chronological age over-age for their grade. Ten of the 19 are chronologically from two to four years over-age. *In other words, those who are accelerated in school on the basis of mental age are usually retarded on the basis of chronological age.* The explanation is obvious. The school tends to promote children by age rather than ability, and although the very dull are allowed to become somewhat retarded, this retardation is ordinarily less than would be warranted by their actual mental development. For

example, there are six children of mental age 10 in the sixth grade. Two of these are 14 years of age, chronologically, two are 15, and one is 16. Of the two children of mental age 11 in the eighth grade, one is 17 years old, three are 16, and five are 15. Only two are normal age for the grade.

Turning now to the 85 children who are *retarded* two or more grades below the norm for their *mental age,* we find that 23% are by chronological age actually accelerated, and that over half of the remainder are in the grade where they belong by chronological age. Only 8% of those who are retarded two years or more according to mental age are retarded as much as two years by chronological age. This again confirms the suspicion that promotion is largely governed by chronological age and helps to explain why children of any given mental age are distributed over such a wide range of grades. There are of course other factors which sometimes cause children to be enrolled in grades too low for their mental age. Among these are irregularity of attendance, illness, and lack of industry.

Comparison of grade status by mental age and chronological age reveals the striking fact that, on the whole, the grade location of school children does not fit their mental age much better than it fits their chronological age. Except in the upper years, children of a given mental age are scattered over nearly as wide a range of grades as children of that chronological age. Plainly the efforts made at school grading fail to give groups of children of homogeneous mental ability.

That this is largely due to the incorrect grading of children of inferior and superior intelligence is easily shown by taking those whose intelligence quotient is practically normal, say between 96 and 105, and finding how these distribute themselves in the grades. This method gives the correlation relatively freed from the constant tendency of teachers to over-promote the dull and under-promote the superior children. Of our 227 children with an intelligence quotient between 96 and 105 only 4 who are below the age of 14 are more than one grade removed from the place where they belong by chronological age. All the two-grade displacements are in the direction of retardation. That is, the child with an I Q between 96-105 is never found (in our data) two grades advanced in school; and the chances are about 50 to 1 that if he is under 14 years of age and tests between 96-105 he will not be as much as two years retarded.

Another interesting comparison may be made by taking the

extreme I Q's and finding the location in the grades for the exceptionally dull and exceptionally bright children of each chronological age. We have done this for the I Q's above 120 and below 80. We will consider first those with an I Q of 120 or above, and by way of information it may be stated that the child who tests at 120 or above belongs with the best 5 children out of 100 selected at random. Of 54 such children, 7 years old or above, 15 are in the grade where they belong by chronological age, and 3 are even retarded one year by chronological age. *That is, 18, or one-third of all those having an I Q of 120 or above, fail to reap any advantage (as far as promotion is concerned) from their very superior intelligence.* They are all doing "very superior" to "average" school work and would doubtless continue the same record if accorded the extra promotions warranted by their I Q. The reluctance of teachers to give such promotions is probably due both to inertia and to an unwillingness to part with exceptionally satisfactory pupils.

Turning now to those who have an I Q of 80 or below, we find 42 children with two-thirds to four-fifths intelligence. Of these, only 2 are in the grade where they belong by chronological age. Both of these were doing "very inferior" school work and neither was promoted the following year. Six of the 42 are only one year retarded. Supplementary data are available for only 4 of the 6. Two of these 4 are doing "very inferior" work, 2 "inferior" work. Of the 18 retarded two years, supplementary data are available for 11, 4 of whom are said to be doing "average" work, 4 "inferior" work, and 3 "very inferior" work. Of the 16 retarded 3 years or more, we have supplementary data for 10, 3 of whom are doing "average" work, 4 "inferior," and 3 "very inferior." It is interesting to note that 2 of the 3 who are doing "average" work are 4 years retarded: one being 13 years old and in the third grade, the other 14 years old and in the fourth grade. This is what we should expect of high grade feeble-minded children of 13 and 14 years.

The above is suggestive as indicating what three-quarter intelligence can do. A child of this degree of deficiency is usually 2 to 4 years below grade for his age, and his work is usually "inferior" or "very inferior." Rarely is he found in the grade where he belongs by chronological age and he never does better than "inferior" work there.

To summarize our results bearing on the relationship between grade progress and I Q, we have found:

1. That the range of distribution over the grades by mental age, though somewhat less than that by chronological age, is unjustifiably great.

2. The wider disagreements between the I Q and the grade status of the children are confined chiefly to those who are superior to or below the average in ability. The explanation for this has been found in the fact that the tendency of the school is to promote children by age rather than ability. Those who have an I Q between 96 and 105 are hardly ever more than one grade removed from the location which is normal to their mental age.

3. The child with two-thirds to three-fourths intelligence (I Q 65 to 75) never does satisfactory work in the grade where he belongs by chronological age. After the age of 8 or 9 years he is usually found doing "very inferior" to "average" work in a grade two to four years below his age. Retarded by chronological age, by mental age he is actually accelerated.

4. The child with an intelligence quotient of 120 or above is rarely found below the grade for his chronological age, and occasionally he is one or two grades above. Compared to his possibilities, however, the child of exceptionally superior intelligence is almost always retarded. Wherever located his work is nearly always superior, and the evidence suggests strongly that this superiority of school work would continue even if extra promotions were granted.

Are Children of Genius Usually Defective or Queer?

It is commonly believed that bright children are especially likely to be one-sided, nervous, delicate, morally abnormal, socially unadaptable, or otherwise peculiar. We have secured from teachers rather extensive information on these and other points regarding 31 children having an intelligence quotient of 125 or above.[2] This degree of intelligence is possessed by only about 2 children out of 100, and is about as far above average intelligence as feeble-mindedness is below. The facts regarding these children, according to the testimony of their teachers, are as follows:

1. *Ability special or general.*—In the case of 20 out of 31 the ability is decidedly general, and with 2 it is mainly gen-

[2] The data here presented represent a portion of a larger study of talented children.

eral. The talents of 5 are described as more or less special, but in only one case remarkably so. Doubtful, 4.

2. *Health.*—Fifteen are said to be perfectly healthy. Thirteen have one or more physical defects. Four of the 13 are described as delicate, 4 have adenoids, 4 have eye defects, 1 lisps and 1 stutters. Of the 4 delicate children, 1 has kidney disease, 1 digestive trouble, and 1 has been threatened with tuberculosis. On the whole, the health conditions appear to be fully up to the average for non-selected children in the schools.

It should be pointed out, too, that most of these children are from superior homes and that for this reason their physical defects would naturally be better known than would be the case with children from inferior homes.

3. *Studiousness.*—"Extremely studious," 15; "usually studious" or "fairly studious," 11; "not particularly studious," 5; "lazy," 0.

4. *Moral traits.*—Favorable moral traits only, 19; one or more unfavorable moral traits, 8; no answer, 4.

Children with unfavorable moral traits are as follows:

"Very self-willed,"	2
"Needs close watching"	1
"Cruel to animals"	1
"Untruthful"	1
"Unreliable"	1
"A bluffer"	1
"Sexually abnormal and vicious"	1

The last-named child is the only one with more than one unfavorable trait, and he is described as being sexually abnormal, obstinate, perverted, and vicious. It will be noted that the bad traits of most of the others can hardly be regarded, from the psychological point of view, as really serious.

5. *Social adaptability.*—Socially adaptable, 25; not adaptable, 2; doubtful, 4.

6. *Attitude of other children.*—"Favorable," "friendly," "liked by everybody," "much admired," "popular," etc., 26; "not liked," 1; "inspires repugnance," 1; no answer, 3.

7. *Is child a leader?*—"Yes," 14; "no," "not particularly," etc., 12; doubtful, 5.

8. *Is play life normal?*—"Yes," 26; "no," 1; "hardly," 1; doubtful, 3.

9. *Is child spoiled or vain?*—"No," 22; "yes," 5; "a little," 2; no answer, 2.

While the data just presented are not extensive and are subject to more or less error owing to the method by which they were collected, they suggest strongly that there is little if any ground for the wide-spread belief that genius children are more likely than ordinary children to be one-sided, unadaptable, morbid, queer or physically delicate. According to the testimony of their teachers *such children are fully as likely to be healthy as average children; their ability is far more often general than special, they are studious above the average, really serious moral faults are not common among them, they are nearly always socially adaptable, are sought after as playmates and companions, their play life is usually normal, they are leaders far oftener than other children, and notwithstanding their many really superior qualities they are seldom vain or spoiled.*

Are we not justified in concluding that it would be greatly to the advantage of such children if their superior ability were more promptly and fully recognized and if (under proper medical supervision, of course) they were promoted as rapidly as their mental development would warrant? Under the present regime, when such children attain their highest possibilities it is more often in spite of the school than because of any special help or encouragement they receive from it. Even genius finds it difficult to survive when held over-long to tasks that are too easy.

Mental hygiene demands such an observance of the laws and conditions of mental activity as will promote the highest functioning which is possible without injury to the mechanism involved. The data presented suggest that these laws are frequently transgressed in the educational treatment of exceptional children. On the one hand, children of low-grade intelligence are promoted beyond their power to do. It is altogether probable that the wide-spread agitation against the evils of retardation has carried us too far, or rather that it has carried us in the wrong direction. Instead of developing a differentiated course of study which would allow dull children to make steady progress without becoming retarded we have too often promoted them to tasks which for them are impossible of accomplishment. The inevitable result is apathy and discouragement, or else over-pressure.

Bright children, on the other hand, are almost always under-promoted. They are rarely given tasks which call forth their best ability, and as a result they run the risk of falling into life-long habits of submaximum efficiency. These, too,

should be given the advantages of a differentiated course of study. There is probably little ground for the common fear of over-pressure in the training of such children. The sub-normals are more in danger of over-pressure; the super-normals of under-pressure. In the interest of both groups, mental hygiene demands that researches be undertaken for the purpose of ascertaining more definitely what performances may rightly be expected of 75 per cent. or 125 per cent. intelligence at the various age levels.

DIFFERENTIATION OF THE FIELD IN UNIVERSITIES, COLLEGES AND NORMAL SCHOOLS IN THE TRAINING OF TEACHERS

By A. W. Trettien, Toledo University

The question of the differentiation of the field in the training of teachers is a very living issue among educational institutions today. It is, as it were, the culmination of the development of three-quarters of a century in the attempt at training teachers professionally.

The movement began with the impulse that sprang from the German influence in training teachers in the normal schools of New England that offered a year's course in the elementary branches to young people who had attained the age of at least sixteen years. On completion of the course the licentiate was equipped to teach the studies required by law to be taught in the elementary schools. These primitive normal schools were the joint product of private and public liberality; both citizens and legislatures sharing in the responsibility of founding them.

This normal school idea spread rapidly into the western states. Lexington was established in 1839; Albany, N. Y., in 1844; Ypsilanti, Mich., in 1852; Normal, Ill., in 1857; Oswego, N. Y., in 1860; Emporia, Kansas, in 1864; Platteville, Wis., in 1866; Cedar Falls, Iowa, in 1876. These schools, and others established subsequently, conformed, in general, to the Massachusetts type. They admitted pupils of varying degrees of preparation, offered a four year's course in the common school branches with advanced secondary school subjects, together with general psychology, history of education, general and special methods and management.

As the public school system expanded with a fuller development of the elementary schools, the kindergarten, and the public high schools, two lines of development occurred in the training of teachers. Colleges and Universities which had for centuries sent out their graduates and under-graduates to teach in lower schools, now began to add, in addition to the courses in the liberal arts and sciences, courses in general psychology, history of education and pedagogy for those who might choose to teach. Iowa, Michigan, Wisconsin, Missouri and Kansas were among the early universities to

establish such departments of pedagogy. There was, however, as yet no differentiation in the legal requirements of teachers. With the increased number of public high schools proper articulation was made with a two years' course in the normal schools, and some of the more ambitious schools took a second step by adding a third and a fourth year to the course thus establishing the "Normal College," and granting the degree of Bachelor of Pedagogy.

Cedar Falls, Iowa, began with this course in 1876; Ypsilanti, Michigan, added the course in 1897; Albany, N. Y., in 1890; Emporia, Kansas, in 1907; and many others have followed this same course. This expansion of the secondary schools was met, at the same time, in the colleges and universities by the organization of schools or colleges of education, so that today every first class university and college in the country maintains a co-related department or a separate school or college for the training of teachers. While the normal schools have sent some of their graduates to teach in the smaller high schools, the general tendency has been to prefer college and university graduates, even with limited pedagogical training, in the more advanced high school positions. The National Educational Association through its committee of seventeen has established its position that teachers in secondary schools should have a college or university education. The North Central Association of Colleges and Secondary Schools places the minimum scholastic attainments of teachers of academic subjects in secondary schools equivalent to graduation from a college belonging to the Association.

Professor Thorndike's study of the number of years spent by secondary school teachers in training beyond the elementary school in the country at large shows, in the main, eight years.

In the light of this brief historical survey and the increasingly differentiated field of education, what is the most feasible plan for the training of teachers for public school service,—feasible from the standpoint of efficiency and economy? All will admit the fact that the field of education is becoming increasingly more complex and differentiated. The equipment, the personality of the teacher, the nature and purpose of the subject-matter, the method of instruction, and the knowledge of child-psychology of the high school instructor will differ essentially from that of the kindergarten, the elementary teacher, the supervisor of general or special fields and the rural school teacher, if the highest efficiency is sought. In the elementary school the subject-matter is elementary and remains fairly constant in its emphasis upon the

fundamental facts and processes for the training of citizens in a democracy. The method of presentation must vary according to the class of children taught. The teacher's real problem is to understand the child's life and mind to such an extent as to employ the best method in directing the child's fundamental interests. The teacher of the adolescent youth, however, has the added responsibility of leading the youth to a discovery of self and self mastery in relation to his subject-matter. The secondary school teacher needs to possess a vastly broader knowledge of the subject-matter he wishes to teach and its bearing upon the immediate life interests of the youth. The stage of culture represented by the high school youth requires a different method of approach for the best results. What is the solution?

Two possibilities present themselves. First, that the normal schools extend their courses to become the training schools for all teachers in the public school systems. The second, that the work be differentiated among universities, colleges and normal schools, and each be restricted to the field for which it is best equipped to render most efficient service. The success of the first plan, the extended courses in the normal schools may be judged, in a measure, by the number of students who have in the past remained to take the added work for the normal college degree in those schools in which it has been offered.

Ypsilanti during the first eleven years of the existence of the normal college from 1897 to 1908, with an annual enrollment of over 1300, had but sixteen enrolled in the third and fourth years; of these eleven were in the third year's course leading to the degree of bachelor of pedagogy, and but five in the A. B. course.

At Albany Normal College, which was designed to be the State Normal College for preparing teachers for secondary schools, the situation was similar. Commissioner Draper expressed regret in his annual report that, while the Albany Normal College was designed to be potential in preparing teachers for secondary schools, superintendents and other supervisory offices, it was to his regret that this hope had not been realized.

The Iowa State Normal School at Cedar Falls granted twenty-two A. B. degrees during the first twelve years of its existence.

In the State of Kansas, with an enrollment in the normal school that is nearly equal to that of the entire university, the situation is similar. The number of teachers in the high school in that State in 1911 who had received their training

in the university was 257, of this number 221 were teaching in first class, 33 in second class and 3 in third class high schools. The number of high school teachers who had received their training in the State Normal School was 207. Of this number 132 were teaching in first class, 52 in second class and 23 in third class high schools. It must be borne in mind that the University of Kansas is one of the most conservative and retarded among universities in the matter of training teachers, and the normal school one of the best in the country. If we add to this number the 295 teachers who have received their training in other Kansas colleges the ratio changes as follows: Of this number 220 are teaching in first class, 64 in second class and 11 in third class high schools. The number who received their training in colleges outside of Kansas was 181 of which 160 were teaching in first class, 13 in second class, 8 in third class high schools.

Judging from these facts, the plan of extending the normal school course to include the training of the teachers for the elementary and secondary, rural and college work has not met with success. And the reason is two fold: First, the present organization of the normal school is the result of a process of social and institutional evolution, it fills a definite place in the educational system. The majority of students who attend the normal school are young men and women, mostly young women who have a rather definite purpose for attending. It is distinctly a professional school. Second, other institutions have developed to serve society more efficiently in other ways and we are led to consider the second plan.

The plan of proper articulation between the normal school, the college and the university is the only feasible alternative that can be considered in our present state of institutional organization,—feasible from the standpoint of economy and efficiency.

In considering the functions of the various institutions it is not my purpose to state whether this or that institution should have a course that should offer one, two, three or more years beyond the high school. That will be determined, to a large extent, by the way in which it meets its functions, and the state which it serves.

The function of the normal school according to its history and development, according to the personnel of its faculty, the student body and constituency, the course of study and curriculum, the methods of instruction and equipment of library and laboratory, is that of training teachers for the kindergarten, elementary, rural and grammar schools. This

without doubt is the biggest problem in education today, and if the normal school will place its emphasis upon this distinct field of work in an artful way, it will have one of the largest and most important fields in the service of humanity. We have still much work to be done before we shall cease sinning against child life in our elementary schools. Let him who doubts this statement observe the results in the physically deformed, the anaemic, the backward, listless and indifferent children who plod their weary way from grade to grade without zest because the teaching is not alive to their needs; or those who drop by the wayside as failures, or those who escape in open rebellion and play truant to become the incorrigibles upon the street, a menace to their homes and to society.

One of the greatest pedagogical needs today is that of developing an art and technique in elementary education that shall meet the needs of every child at every stage of development and then to train those who are to teach him. This is the unique field of work for the normal school, here it is without competition. This will be the economical plan because the most efficient.

But the training of teachers for elementary and rural schools implies a second function. With the demand for greater efficiency in teaching a new conception of a more efficient system of supervision of elementary schools and school work is needed. While it is true that we need to train expert kindergarten, expert primary and expert grammar grade teachers, they need expert supervision with whom to counsel and advise for the purpose of eliminating waste. We need also to apply new principles and processes for greater efficiency. The supervisor needs to be trained especially in the principles and practices of education, and in school administration as based upon the laws of child growth, development and hygiene in order to enable him to observe and to direct constructively the work of his teachers. He must have organized the subject-matter for every grade according to the principles of genetic psychology and hygiene of development in terms of which he must measure his results.

Another function of the normal school is to keep in close touch with the problems that are continuously arising in its field. It must send out its experts to study local conditions and needs, to adjust its curriculum to meet these needs, and to enlighten the public in matters of organization, legislation, administration and child-welfare. If the normal school attempts more than this under our present conditions, it will of necessity neglect its own field, and be compelled to increase

its equipment to duplicate the college or university plant in library, laboratory and instructional force, and this under present conditions is not feasible.

The first function of the college and the undergraduate departments of the university in the training of teachers, according to our present professional standards, is that of preparing departmental teachers in the secondary schools, normal schools, colleges and universities. The academic courses required for this work are a major subject and two allied minors. The minimum requirements in pedagogical courses that will best meet the needs of this class of students are adolescent psychology, hygiene of development, principles of education, special methods of the subjects the candidate expects to teach, and observation and practice work.

The greatest problem in the training of teachers for secondary schools today is that of developing in the candidate an appreciation of the nature of the young adolescent and the proper relation that the subject-matter bears to youth. Too often the college or university teacher thinks of subject-matter alone and holds a haughty aloofness toward anything that suggests a method of teaching his subject to young people of school age.

He may even pride himself upon the fact that he himself has method to teach, be it wise or otherwise. This is only too apparent when he attempts to conduct a class of would-be teachers in the special method of his subject or in directing the work of a practice teacher. At any rate the young candidate attempts to teach high school pupils as he was taught in college and the results are disappointing. Hence the young teacher needs to understand the adolescent mind, he needs the technique of his special field of culture; these can only be acquired after a thorough course in the subject itself and in addition properly articulated pedagogical courses. California is right in requiring one year of graduate work for the teacher's certificate for high school work. A second class of students will be found in every college among those who expect to teach the technical educational subject or to do administrational work. This class will need to major in the general field of education, including a broad course in the academic subjects, but especially in the fundamental courses bearing upon human growth and development, social organization, education psychology, technique of teaching, school hygiene and administration; a general course in the study of retarded and exceptional children and practice teaching. This course as suggested will require at least one year of graduate work, better two, and can therefore only be

offered by such institutions as have the faculty and equipment to do graduate work.

But there is still another service that the university must render in the field of education. There are many problems in education that are pressing for solution, problems of hygiene, of administration, of adjustment of the curriculum, of social welfare, of vocational guidance, vocational training, of retardation; even the old problems of co-education and special methods of instruction and discipline are far from a successful solution. Then there are new fields that are being exploited in determining greater efficiency in instruction as well as in institutional organization; new studies in biology, physiology, sociology, psychology and ethics that have a direct bearing upon educational principles and methods. All these studies must be reorganized and made available for the practical teacher and school administrator. This research work requires quite a different type of mentality from that of the teacher in the elementary or the secondary school or the administration officer. It is, however, one of the essential parts of our training equipment of today. To this class of educational experts belong the problems of special investigation bearing upon agricultural, industrial and professional training; reorganization of the geographical units and their supervision; consideration of needed legislation; special study of the psychology of exceptional children, subnormal, retarded, wayward and exceptionally gifted children and a suggestive course of training outlined for each. Such a course would require two or three years of graduate work, and would naturally lead to the higher or service degrees.

In a democracy such as we have in America, where the state and church are separated, the college has a distinct function and that is to offer courses in religions, literature and religious psychology and pedagogy that shall prepare teachers of religion and morals. This is not the place to discuss the question whether morals can or cannot be taught directly. Religion and morals are attitudes of mind that rest upon the same psychological processes as do mathematics and science. And a knowledge of these can be developed in the growing youth that will shape his life career and cause him to succeed or a lack of them may cause him to fail. One of our great educational awakenings of the present time is the value and efficiency of the moral life in all callings. Biology, neurology, sociology, psychology and history of morals all teach this. The home, the schools, the Sunday Schools and the churches need a thoroughly organized course of study for the teachers. The college is unique in its organi-

zation to serve in this respect. Teachers of the first rank of ability and training are needed today in every community.

The college organized upon the independent foundation has an opportunity to serve the public that is not offered even by the state institutions. An ancient philosopher said that the state cannot lift itself, but the uplift must come from private initiative. The great movement in the training of teachers in colleges and universities was not initiated in the state institutions in this country. Clark, Chicago and Columbia Universities, upon private foundations, took the first advanced steps in organizing thoroughly scientific courses in Education. They are pioneers in research work. They are more independent to move forward unhampered by a tax paying and a politically organized constituency.

Finally, one more consideration. In the past there has existed in many parts of the country a spirit of triangular rivalry and jealousy between the normal school, college and university that has been as unprofessional as it is an obstruction to progress. The new order in social organization is differentiation in function according to efficiency in service. This means a recognition of differentiated functions and co-operation, not competition. It means staff organization based upon principles of social efficiency instead of line organization based upon authority of a dictator. This is the new organization in our more efficient school system with an expert in every field whose ideal is efficient service. It means a new day for educational progress in which each will render the best service for which his talent has fitted him.

THE HUMANISM OF ROGER ASCHAM

A Quantitative Study of Classical References in Ascham's *Scholemaster*

By Herbert Patterson, Dakota Wesleyan University

Roger Ascham was one of the greatest humanistic educators during the Renaissance period. His book—*The Scholemaster*—has received much attention, not only because of its intrinsic worth but also because it is a representative treatise of the English humanism which was current in the latter part of the sixteenth century. A modern educator says of *The Scholemaster:* "It is one of the most representative of Renaissance writings in England, one of the most typical works of the time in English literature and one still of real importance in its view of the early teaching of the classics." [1] Any study, accordingly, of *The Scholemaster* is not altogether particular in its value and confined to the work of Ascham, but refers, in a general way at least, to that group of educators called humanists of which Ascham may be regarded as typical.

It is a commonplace to say that the Renaissance humanists greatly emphasized the importance of classical literature in education. Anyone who has read the works of these men is well aware of their habit of referring repeatedly to Greek and Latin writings. To take a typical book, such as *The Scholemaster,* and to make a quantitative study of the classical references found in it, gives, however, a more vivid and concrete flavor to one's knowledge, even though it may add little, if any, information of an entirely new character.

The following tables embody the results of a careful study of the names of persons to whom reference is made in Ascham's *Scholemaster.* They exclude entirely the names of books, but include every mention that is made of persons.[2]

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[1] Foster Watson, in Monroe's Cyclopedia of Education, Vol. I, p. 247.

[2] The text used in this investigation was that edited by Edward Arber, pub. by D. C. Heath & Co., 1898.

TABLE I.—*Names Occurring More Than Once, Together with the Exact Number of Times Each Name Occurs*

Cicero	135	Plutarche	3
Plato	59	Hesiodus	3
Homere	39	Polybius	3
Aristotle	34	Lysias	3
Demosthenes	27	Achilles	3
Socrates	24	Sulpitius	3
Terence	22	Laelius	3
Salust	22	Catullus	3
Horace	21	Plinius Secundus	3
Virgill	20	Augustus	3
Plautus	20	Robert Sackville	3
Caesar	19	Tho. Smithe	3
Xenophon	18	J. Mason	3
Isocrates	18	Pope	3
Quintilian	18	S. Paul	3
Varro	16	Eobanus Hessus	3
John Cheke	15	John Whitneye	3
Christ	14	William Peter	3
Queen Elizabeth	14	Doctour Readman	3
Sturmius	14	Menander	2
Thucydides	12	Basileus	2
T. Livius	12	Apelles	2
Ulysses	10	Theopompus	2
Sophocles	9	Philip	2
Euripides	9	Plinie	2
Watson	9	Ovid	2
Crassus	8	Scipio Africanus	2
Seneca	7	Ennius	2
Melancthon	7	Perionius	2
Dionys. Halicarnasseus	7	Pompeius festus	2
Erasmus	6	Fuscus	2
Pindar	5	L. Plancus	2
Petrarche	5	Talaeus	2
Aeneas	5	P. Victorius	2
Antonie	5	G. Budaeus	2
Cato (elder)	5	Whittington	2
David	5	D. Wotton	2
Haddon	5	John Astley	2
Nico. Medcalfe	5	Hall	2
Richard Sackville	5	Luther	2
Barthol. Riccius	5	Darius	2
Aristophanes	4	Cyaxeris	2
Herodotus	4	Calidius	2
L. Crassus	4	Calvus	2
Cyrus the Great	4	Horman	2
Brutus	4	Walter Mildmaye	2
Atticus	4	Sampson	2
Scaevola	4	Lord of Surrey	2
Macrobius	4	Henr. Stephanus	2
Chaucer	4	Sambucus	2
Longolius	4	Ramus	2
Osorius	4	Tho. More	2
Aeschines	3	Bocace	2
		Scipio	2

TABLE II—*Names Occurring But Once*

Aeschylus
Antisthenes
Aemilius Probus
Alcybiades
Afranius
Andocides
Aphthonius
Agesilaus
Andration
Aesopes
Actius
S. Austen
Molo Appollonius
Antonius Triumvir
Ariostus
S. Augustine
Bellaeus
Bembus
D. Brutus
Syr F. Bryan
S. Basil
Bridewell
M. Brokke
Brocardus
Croesus
Conon
Cymon
S. Chrysostome
Duke of Cleves
William Cicell
Baldesar Castiglione
Cornelia
Cuspinian
Celsus
Sebastian Castalio
Chrysogonus
Cerilius
Crito
Caelis
Cephalus
David Cythraeus
Conterus
C. Crabo
Camerarius
Cortesius
A. Cecinna
Roger Chamloer
Demetrius
Dinarchus
Demades
Dionisius
Sir Anto Denys
Dion. Prussaeus
Dormous
Donatus
Duns
Euclide
Ephorus
Epeius
Eunomius
Elmer
Edward
Senese Felice Figlincci
Francis I
Ca. Graccus
Tib. Graccus
Galene
Jane Grey
Goodricke
Steph. Gardiner
Serg. Galbo
Helvidius
Hector
Q. Hortentius
Hermogenes
Hiero
Th. Hobbie
Bernard Hampton
Hieremie
S. Hierome
Haines
Iphicrates
Isaeus
Jesus (son of Sirach)
S. James
Julianus Apostata
J.
Kemppes
Lycurgus
P. Lentulus
Lucian
P. Lombardus
Diog. Laertius
Langaeus
Lucretius
Maximilian
Miltiades
Mercurie
Moses
Machiavel
Lord Maior of London
H. Matreuers
Nicasius
S. Nicolaus
Th. Norton
Origene
Omphalius
Oedipus
Piso
Pallas
Panaetius
Pericles
Pygius
A. Pollia
King Philip of Spain
Palingenius
Gonsaluo Periz
Politian
Th. Phaer
Skippe
Carolus Sigonius
Sadoletus
Suetonius
Strabo
Stalenus
Simmias Rhodius
Duke of Suffolke
Solomon
Theophrastus
Trogus
Turmis
Tomitanus
Theseus
Torquatus
Tacitus
Themistocles
Timocrates
Timotheus
Tirefias
Theocritus
Thrasybulus
Vellius Paterculus
Venus
Vidam
Wiat
Xantippus

TABLE III—*Quantitative Summary of Tables I and II*

Number of Names Occurring More Than Once (Table I).....	107
Number of Names Occurring But Once (Table II).....	146
Total of Names, Excluding Repetitions (Tables I and II).....	253
Total of Names, Including Repetitions (Tables I and II).....	1035

TABLE III—*Continued*

Greek Names, Excluding Repetitions (Tables I and II)	78
Latin Names, Excluding Repetitions (Tables I and II)	67
English Names, Excluding Repetitions (Tables I and II)	65
Names Other Than Greek, Latin, and English (Tables I and II)	43
Greek Names, Including Repetitions (Tables I and II)	361
Latin Names, Including Repetitions (Tables I and II)	421
English Names, Including Repetitions (Tables I and II)	153
Names Other Than Greek, Latin, and English, Including Repetitions (Tables I and II)	100

From such data several interesting generalizations may be drawn. The first of these to be noted is the great number of references to men which one finds in *The Scholemaster*. While the book is not a large one, containing something less than fifty thousand words, there occur in it over one thousand references, and more than two hundred and fifty of these are to different persons. This means that throughout the book there is an average of one reference to every fifty words or less. In this characteristic Ascham is representative of Renaissance humanism with its breadth of reading.

Even more representative of the period, however, is the large number of classical references which appear in *The Scholemaster*. If repetitions be included, there are 782 classical references out of a total of 1035 references, which is more than seventy-five percent. The Greek and Latin classics were much studied by the scholars of the Renaissance humanistic period.

The comparison of Greek and Latin references proves interesting. Latin had been the favored language during the long ages of Mediaevalism, but the Renaissance brought with it a new emphasis upon the Greek language and literature. While one of the main purposes of *The Scholemaster* is to set forth a method for the teaching of the Latin language, it is to be noted that the number of Greek references, when repetitions be excluded, exceeds the number of Latin references, the former being seventy-eight and the latter only sixty-seven. The question may well arise: Why is it that when the repetitions are included the Latin references outnumber the Greek? The answer is not far to seek: the reason is to be found in the exceedingly large number of references to Cicero. Cicero's name could have occurred seventy-five times and still the Latin references would not have been in excess of the Greek; but when this one name occurs one hundred and thirty-five times, there is a balance of sixty more Latin references than Greek. It seems fair to say that in breadth of reference, the Greek classics surpass the Latin.

Was Ascham a Ciceronian? If it were not for the breadth

of reference to Greek and Latin classics, one would have little difficulty in maintaining that Ascham ought to be classed among the Ciceronians. One modern educator remarks that *The Scholemaster* "is so largely devoted to a discussion of method that the general impression left from the insistence on the importance of grammar is that of the narrower humanists."[3] It is certainly true that his admiration for Cicero was unbounded. Note such expressions as the following: "that excellent perfitnesse, which was onely in Tullie, or onely in Tullies tyme;"[4] "my Master Tullie, from whom commonlie I am never wont to dissent;"[5] "Tullie whom, above all other, I like and love best;"[6] "in Tullies tyme onely, and in Tullie himselfe chieflie, was the Latin tong fullie ripe, and growne to the hiest pitch of all perfection."[7] With all his admiration for Cicero, however, Ascham did not fail to appreciate the value of other classical writers, both Latin and Greek. We must not overlook such remarks as these: "in Caesar onely could never yet fault be found;"[8] "by right Imitation of the perfit Grecians;"[9] "the divine Poete Homere;"[10] "Plato also, that divine Philosopher;"[11] "those that were wisest in judgment of matters, and purest in uttering their myndes, the first and chiefest, that wrote most and best, in either tong, as Plato and Aristotle in Greeke, Tullie in Latin."[12] It is of interest to note that the name Cicero occurs but thirty-nine times in *The Scholemaster,* while the more affectionate name Tullie appears ninety-six times.

The statement has been made that at the time of the Renaissance Plato came to receive more attention than Aristotle, that while Aristotle was the accepted philosopher of the Middle Ages, Plato was the philosopher of the Renaissance. In harmony with this general tendency, it is noticeable that Plato is mentioned in *The Scholemaster* fifty-nine times and Aristotle but thirty-four.

The high respect in which Homer is held is evidenced by his name being the third on the list, preceded only by Cicero and Plato. It is not without significance that the name of Cicero is followed by five Greek names before another Latin

[3] Monroe: Text-Book in the History of Education, p. 383.
[4] Ascham: The Scholemaster, Arber ed., p. 286.
[5] *Ibid.*, p. 296.
[6] *Ibid.*, p. 298.
[7] *Ibid.*, p. 299.
[8] *Ibid.*, p. 317.
[9] *Ibid.*, p. 288.
[10] *Ibid.*, p. 157.
[11] *Ibid.*, p. 158.
[12] *Ibid.*, p. 237.

name appears: Plato, Homer, Aristotle, Demosthenes, and Socrates.

While a study of this type can not be taken too seriously, it is not, I believe, without value. Its interest is of course greatest to one who has read with appreciation *The Schole-master.*

BEGINNINGS OF THE SUPREME PEDAGOGY

By G. Stanley Hall

I. John the Baptist.—Palestine in Jesus' time was extremely different from what it is now. It was a fat and fertile land, and intensively cultivated, for the ancient Hebrews had a passion for agriculture. Its diverse altitudes, which gave it a varied climate, also made it yield a vast variety of products. It was well watered and timbered and crossed by the great caravan routes between Africa and Asia. It was rather densely populated (one writer estimates five million inhabitants), although we have no reliable data on this point. It was indeed a land of plenty, flowing with milk and honey. It was beautiful and its people were very industrious. Of old it was the land promised to their fathers, and had been looked forward to through all the forty years in the wilderness. To see them established in it was the goal of Moses' endeavor, and under Joshua their blood had been poured out to take the land from the corrupt Canaanites. Throughout the diaspora and in all the captivities their soul had yearned for and idealized it. Here they had multiplied and prospered. It had been given them as a patrynomy by their deity, and no fatherland has ever been more passionately loved. It had been hallowed by associations with the theocracy and the great prophets, and the memory of the splendid kingdom under David and Solomon. Thus few lands and races in history have been so closely mated.

Despite all these great advantages the people at the dawn of our era were wretched, depressed, and in misery. Some three-score years before, the Romans had feudalized the land and practically made them captive in it. Liberty was gone and there were taxes on persons, income, cattle, roads, bridges, movable property and market sales, and, worst of all, these taxes were farmed out to the highest bidders, who often sublet them and extorted more in the form of forced presents, if not by more aggressive means. These resources went to sustain the Roman courts and armies. Thus the people were kept in bitter poverty in their own land of abundance. They were in perpetual dread of their creditors and of venal judges who could enslave debtors, sell their wives and children, and even put them to death. There was thus great economic as

well as political tension and occasional outbreaks of revolt, while the strong and long repressed hope of a great deliverer, which had flamed up in the days of Judas Maccabeus (he of the mailed fist, who after ages of exile and captivity had thrown off the foreign yoke and given his people an all too brief but welcome taste of independence), had in the two centuries since this event almost died out. Not only was their kingdom lost, but their religion had reached perhaps its very lowest ebb. No prophet of note had appeared for three centuries, for piety had been almost lost in the petty rivalries of sects, and righteousness had become a lifeless thing of rigid forms and ceremonies, some of which must have made life a burden to those who tried to conform to them. It was at this on the whole perhaps the darkest hour the chosen race had ever seen that the dim but majestic figure of John the Baptist appeared.

In their reports concerning him the discrepancies of the four gospels almost reach their climax. Legends, which are very loquacious about him, differ widely and so do modern scholars. The well known paragraphs of Josephus suggest no relation between John's agitation and the work of Jesus. He has played a not insignificant rôle in pagan nature saga.[1] On the other hand, those who deny the historicity of Jesus deny that of John.[2] Thus divergencies, even in essentials, are far beyond the possibility of harmonization by the methods of critical scholarship. But the Baptist's psychopheme, if we may thus call the collective rank and tangled mass of tradition and literature about him, however we interpret it, constitutes an integral element of Jesusism, for without it our conception of all the first part of Our Lord's career would have to be quite radically recast. It presents, however, a most challenging and stimulating problem to the psychologist. His problem, however, is not insoluble, and his first task is to rescue the Baptist from the rôle which has, from the first, been assigned to him, of being a mere *avant courrier* of Jesus. It was subsequent events that made him this. The chief factors in his psychic diathesis may be characterized with much confidence somewhat as follows:

1. The prime motivation of his life was a passion for common, everyday, personal morality. He was an inflamed conscience, and he was also ahungered and athirst for righteousness. His *vox clamantis in deserto* was that of the categorical imperative, although, unlike Kant's formulation of

[1] Dähnhardt: Natursagen, 1902. Bd. 2., *passim.*

[2] See, *e. g.,* B. W. Smith: Jesus and the Baptist. *Open Court,* 1914. p. 38 et seq.

it as pure oughtness, John applied its momentum to specific duties of individuals and vocations, telling publicans, soldiers, etc., what to do. His prescriptions were not merely negative, like the decalogue, nor did they merely gently dissuade from wrong courses like the daimon of Socrates, but they were essentially positive as well as specific: "Share your food and raiment, do no violence, accuse no one falsely, be content with your wages," etc. "Your boasted Abrahamic descent is of no avail. Your leaders are a generation of vipers." Unlike many of the prophets of old, he had no word of commiseration for his countrymen because of their subjection to an alien power. He enumerated no formidable list of their sins, made no awful indictment of general depravity, did not attempt to hearten the people by any predictions of good times coming, nor did he inveigh against the temple or its services. His tocsin call was addressed to each individual, assuming that he best knew his own sins, to change his life for the better. John was essentially an ethical revivalist, which is very different from being a cold ethical culturist. His appeal for moral reformation was direct, concise and personal. His method, too, was contagious, because the soul of the ancient Hebrews was so soaked with an inveterate sense, deeply graven in it by all their laws and prophets and racial history as they interpreted it, that all outer hardships and calamities were sent as penalties for wrong-doing, and on the other hand, that prosperity was a reward of merit. Hence their present low estate must be a measure of their sin and an index of Yahveh's displeasure. The eternal Jew gave the world the feeling, which he today finds it hard to escape, that prosperity and happiness not only belong to but express virtue, although the obverse conviction that failure and pain are the outer expression of sin, as the Book of Job describes, is hard to realize. This Kant thought proved a transcendental world where virtue and happiness and also sin and pain got together, as they must somewhere or else the deep instinctive sense of justice in the human soul is a lie and this is not a moral world. Such, then, was the "word" which came to John in the desert, and which he proclaimed, "Be good as you have never striven to be before; examine and reform your lives."

To this end he insisted it was necessary to envisage, objectify, and thus realize what is wrong in heart and conduct, and pass judgment upon it. The lips of the oracle in the soul, always present if often mute, which distinguishes between right and wrong, must be unsealed. The three great

words are, repent, confess, forsake. The Nietzschian supermoralist never regrets, still less confesses, but psychoanalysis has abundantly shown the transcendant power of just this moral therapy and even justified much in the theory and practice of the confessional. To bring a submerged complex up into consciousness is the essential first step toward evicting it from the soul. John demanded of each a moral autodiagnosis. Not only must faults of character and conduct be realized within as such, but they must be still further alienated by telling them to one or more others, partly because the act of doing so makes them less a part of our own selfhood, and partly because the knowledge that others know our defects constitutes a potent reinforcement of our own efforts for self-betterment.

Now it is this moulting of the bad that is typified by the old rite of baptism, a washing of the body, symbolic of inner cleansing, as if sin were impurity that had accumulated from without or an eruption or exudation. Modern hygiene has shown many new associations between cleanliness and virtue, but John here struck a note that had been dominant through the whole Hebrew story and cult, viz., that of purity. Ablutions almost without number, the fire of the altar, and even the motive itself of the sacrifice, the regimen of the home, camp, temple, food prescriptions and taboos, permissible and non-permissible marriages: all these and many more were shot through with the distinctions between clean and unclean, and everything was motivated by the desire for purity, of which baptism was the outer sign and virtue the inner substance. To have revived these old echoes in the Semite soul and to have interpreted all in a purely personal and ethical sense, to have so profoundly impressed the masses that they came forward and publicly admitted their sin and committed themselves before others to reform, was a prodigious achievement and has its own moving lessons for our present faltering endeavors toward moral education and reform. The movement John started was far-reaching in every sense and was of the highest and most intrinsic significance.[3] Even in Paul's time we are told of John's disciples, ten in one group, who had never heard of Jesus and were preaching their master's protevangelicum. Just what dimensions the movement he inaugurated really did attain, what it would have become had it not been superseded by Jesus, we can hardly hope to know, any more than we can what Socrates would have been without Plato. Socrates had his Xenophon but John left us

[3] O. Holzmann: Leben Jesu. Ch. V, Johannes der Taufer.

no spokesman, and we have no idea how much or little Jesus owed to him.[4]

2. But this fanning of the flame of righteousness in the soul is always and everywhere the one and only sound psychopedagogic beginning of every genuine religious awakening. Without this basis piety is pathological. If religion be only morality touched with emotion, it adds to the former a sense of reinforcement from a higher power not ourselves, however we interpret it. This the popular consciousness needs in order to sustain its grail-quest for purity, which languishes without it. For the multitude virtue for its own sake lacks and needs sanctions which religion supplies. The individual needs to experience an eruption of the deeper, greater, ethnic soul of his folk. By just so much as John felt this he thereby realized that he had made only a right beginning and that a higher transcendental consummation was needed if his work was to grow or even to last. Thus from some such inner sense in John's own soul may have originated the second note in his message, which the synoptists so stress, viz., that of subordination to a greater than he, who was soon to appear and finish what he had begun. Perhaps he felt that the very multitude of his followers, or at any rate the earnestness of their struggles to improve, must surely constitute an irresistible call to some mightier builder in the realm of soul to complete the structure, the foundations of which he had so well laid. Great men appear when they are greatly needed, and

[4] Harnack (What is Christianity? 1910, p. 48) very briefly suggests a modern analogue to John in Fichte, which we must amplify. In 1806 the power of Prussia was shattered at a blow by the Battle of Jena. Its army, allies, industry, trade, were swept away, the country impoverished and exhausted, and its capital garrisoned by French soldiers. Its soil had never been fertile, nor its spirit practical, and its history showed more discord than unity. Its military situation, with strong nations on all sides, was the worst in history. The Teutonic stock had never known such humiliation and its future had never seemed so dark, but the inspiration came in addresses to the German nation, given by Fichte in Berlin each Sunday evening through the winter to large crowds, with Napoleon's sentries at the door and his spies scattered through the hall. He said in substance, "We have still left our strong and healthy bodies, our language, all our own, and not an agglomerate of many tongues like English, and pure blood never mixed with other races. We have our grand traditions. We have wrought out the Reformation, one of the greatest tasks the human spirit has ever achieved. Our ancestors from their tombs call to us not to let the work they died in doing be in vain. We carry the light and hope of the world. If we sink, freedom and humanity sink with us. There is one plain and only way for patriotic restoration. This is not primarily by armies or legislation, but by the slow process of national education we must begin at the bottom and rise like Bonal (in Pestalozzi's homely but most inspiring tale of the recon-

John had made this need a crying one. With the folk a new morality is liable to abort without a new religion. Individual impulses to reform need to be supplemented and reinforced by the energies that slumber in the depths of the unconscious, generic soul of humanity, to work effectively on which is the speciality of religious genius. True, some passages in John's pronouncements may give slight color to the view that John really expected the Lord himself to come to carry on his work, that His baptism of fire was an eschatological finale. But so far as his belief that he was only an inceptor of a greater movement focused in any real or imaginal personality, it was doubtless directed towards a human and not a divine being. John probably thus did share the Messianic expectations of those about him, although we do not know how definite they were and just how much his sense, if he had it, that he was only a herald, annunciator or way-preparer, was an after-thought. If John was enacting a foreordained rôle which was only a prologue to the Jesus drama, or if there was collusion between him and Jesus, then John's character loses something of its primordial inner moral spontaneity, for if he had known nothing of Jesus before He appeared as a stranger at the baptism, his own personality would seem enhanced. Unlike Jesus, John was uncouth, laconic, with a simpler and more incessantly repeated message. John did no healing, Jesus no baptism. If both were independent as well as contemporary products of the *Zeitgeist*, especially as some of the disciples of John became those of Jesus, while

struction of a decadent Swiss village: 'How Gertrude Teaches Her Children'). We must live for our children and train their bodies and minds as never was done in the world before. This has been our chief excellence in the past, our great thinkers have set the human spirit free and have lived for and in ideas and ideals. Thus our duty of duties is to realize the Platonic republic wherein the wisest ruled and racial education was the chief problem of statesmanship. Our policy and destiny must be to clarify our minds, our leaders must be priests of truth and in her pay, investigating fearlessly in all directions, and ready to do and suffer all in the world's holiest cause of science and learning. All classes must unite else the real fatherland long hoped for and long delayed can never come. If we can rise to this lofty duty men of a higher type than the world has yet known will appear." Thus Fichte, idealist and moral enthusiast, spoke and was heard, as no one had ever spoken or been heard in his race, at least since Luther. Education to him was a new dispensation of religion itself. In accordance with this appeal by far more practical men the University of Berlin was founded, education was made cardinal, the central item of national policy, Scharenhorst reconstructed the military system, almost on its present basis, Stein re-edited the land laws and the status of peasants, Jahn founded everywhere the patriotic *Turner* societies and preached again the gospel of ancient Greece that only strong muscles can make men great and nations free. It is the soul of Teutonism thus regenerated that is yet marching on.

others remained true to their master in prison, and even after his death, it follows that it was almost inevitable that the work of these two leaders must be correlated. The fact of John's early departure from the scene would naturally suggest that heaven ordained him as a fit messenger, and so by the time the gospels were composed he had become only the morning star ushering in the Lord of Day. Mark, the earliest gospel, has least, Matthew more, and Luke still more to say of subordination, while in the fourth gospel John does little save to designate Jesus as the Son of God, earth's Redeemer, who is fated to increase as he to decrease, so that he does little more than pronounce his *morituras saluto*. Surely, too, those who heard him would not have been so moved if they had thought him merely an advance agent of another. They must have regarded him as a prophet in his own right, and their response was to his own appeal. But however great he was, his reduction to an introducer was really inevitable with the growth of the greater influence of Jesus. It is, however, time that his dynamic moralism be more or less rescued from its twilight and restored to just appreciation. Again, conversely, if his cogent lesson was taught until all interested knew it by heart; if his bow was shot, his power exhausted and his untimely taking-off was invented to mask the waning of his power, it was also an ingenious device to lay his fictive execution as another indictment against the weak and hated Herod, acting on the whim of a spiteful woman.

Very successfully launched on his career, Jesus was interviewed by a messenger from the imprisoned John, to ask if He were really the Christ. Perhaps John had not heard all that Jesus was doing, or he may have expected still greater things. Perhaps, too, there is intimation that even though Jesus be not He, his faith that there must be some other somewhere was undaunted. John's question, which was characteristically direct, Jesus did not answer as John probably wanted by a specific yes or no. Perhaps He was not yet sufficiently sure of Himself, or not yet ready to proclaim His Christhood openly. So His response was to immediately set about healing "many" sick, plague-stricken, possessed and blind, and to tell John's messengers to report to their master that they had also seen the deaf and lepers cured, the dead raised, and the gospel preached to the poor. Perhaps Jesus thought these therapeutic marvels would most impress John, who was not a healer, as John's specialty of baptism had most impressed Jesus, and that from this report he would infer the answer to his question. When the emissaries of John had gone, He

catechized His circle as to why they had been drawn to John, pronounced him the greatest yet born of woman, although less than the least in the new kingdom. While it is hard to find in this episode, as some have sought to do, any trace of pique on Jesus' part at John's uncertainty about Him, there are phrases in the narrative and after-comments that suggest a perhaps studied ambiguity. It has been said that Jesus thought John would understand reports of cures as symbols of the healing of the soul, more effective than John's cleansing baptism had been, although this acted answer hardly suggests a baptism of fire. There is certainly now a tendency to reverse the traditional view that John recognized the new therapeut as the one he had predicted and died happy, and the consensus of scholarly opinion stresses the probability that John died oppressed with doubt.

Jesus is represented as being moved and seeking solitude when He heard of John's imprisonment and his death. If He had regarded John as an important coadjutor, He realized now that He was alone, and also we are told that He was perhaps in danger of John's fate, since Herod thought Him to be John come back to life. Our ignorance of John is increasingly baffling and almost exasperating. Perhaps his mission, once thought to be very short, was far longer and his work far greater than has been supposed, and perhaps Jesus was far more influenced and inspired by John than we had known. Perhaps, had John not died, his disciples would never have gone over to Jesus. Perhaps if one of John's disciples, who had never known Jesus, had written an account of the Baptist, Jesus would have been robbed of some of His chief superiorities and the contrasts that the gospels so subtly suggest would be lost. If we can infer from Luke's tale of John's birth that his parents were very old, he must have been early orphaned and had to nurse his fiery spirit alone in the wilderness. The few who doubt John's existence stress the fancied symbolism of his meeting death at the hands of the Roman soldiery, and regard it as a distinct prefiguring of the way Jesus was to die, while the ruggedness of John's person and method bring out other contrasting effects, so that he is an admirable counterfoil of Jesus. The main point, however, at this historic distance, to those of real spiritual culture, is that a composite portrait of all the records and traditions concerning John have a most impressive verisimilitude. It is so good and true to human nature that we cannot help wishing it to be historically true, and because we do so it will in fact, for all the intents and purposes of faith, always be so.

Finally, John is for us a classic paradigm of the moral

presentifier. Everything worth while is or must be realized here and now, and also in the individual. What is afar in time or place, and also what is racial, was outside his ken. The history, lineage, blood, rites, in which worths and values had come to center, were decreed nugatory and bankrupt. Everything is true and real only in so far as it can be utilized for personal, inner betterment. All else is vanity, dross, refuse, chaff. Modern biological ethics only reaffirms, and, indeed, we can never get beyond or outside this. The energized will absorbs intellect and feeling in its intentness on the present duty, and the present sucks into itself the virtue of the past and the future, as in the Bergsonian *durée réelle*. Thus man is at his highest and his best. There is no other time and place, but the present is all in all. This is the universal formula of the potentialization of the individual, and one of its chief attainments is unification of soul against all dispersive and schizophrenic influences. Our scattered powers, attainments and experiences are harmonized and consolidated, and all the partial components of self-hood are brought to bear for all they are worth and focalized upon the end in view. Just as shocks of anger and fear may wake dormant powers, summate them and dynamogenize us, leaving us better, stronger, and more safeguarded against every danger of fission of the ego, so a sudden sense of personal sin arouses every moral resource of our nature to better our lives, and to bring a new diathesis of higher moral tension. This is self-salvation, moral autotherapy.

But if this is the greatest theme in the world, the personal duty of duties, it is also the hardest of them all, and human life is in no small part made up of devising ways of distraction or diversion from it. The passion to do the other thing is inveterate, and the soul is full of schemes of procrastinations, or resolutions that abort, or truths that we put into the cold storage of symbols, of obligations that we seek to satisfy by ceremonies, of flabby reasonings and day-dreams that vicariate for achievement. Whenever the present is too hard for us, we fly for refuge to the past or to memory, or find reversion in amusement, which is abandonment to the impulsions of childhood. We place form for substance, the sign for the thing it means, and easy convention for hard virtue. In our very research we are prone to accumulate notes and protocol data without the incessant mental *Bearbeitung* and interpretation they need, and lacking which they become mere learned rubbish. The intensive resistance to moral self-knowledge, self-control and improvement is the most inveterate of all. Things that ought to be done, instead of leaping to ac-

complishment, are stored up in the shadowy limbo of hopes deferred. The times or conditions are never fully ripe, and the psychological moment never strikes. Neither the self as a whole, nor any element in it, is trusted with abandon. The god of things as they are is an unknown god. Wishes and imagination grow pale and falsetto instead of being installed into living actualities. Thus the present is emptied of all meaning and value, rather than filled with them to repletion. How readily all these coward refuges from reality may become pathological in all spheres of life, psychoanalysis has abundantly shown. All these above traits of degeneration John found rife all about him, and hence the gospel that was needed and that he preached was that of presentification. Doctrines, traditions, punctilious ceremonies, are at best mere types and symbols of the one thing needful, righteousness. What is implicit in them must be made explicit. Though they seem *bewusstseinsunfähig,* they are not, but must and can be made conscious, because consciousness is essentially remedial. Awareness is always and everywhere ancillary to activity, and is incomplete without it. It is thus reorientation in the interests of better adaptation or re-education, and this is the method of change and transformation.

Thus while John could ring up the dispersed components available for reform in the individual, he must have come to feel the need of another and greater presentifier, who could summate the deeper and larger resources of the racial soul, for without the consummating work of the religious poet-artist, who is master in this field, the work of the best reformer of individual lives is prone to lapse. If John's more superficial work upon the personal consciousness consisted in taking the first step towards racializing the individual, the larger, converse work of individualizing the racial yet remained for Jesus. Self-consciousness, touched and inspired by the larger life of the race, is always expanded and swings into conformity with it in the moral life, and this is much. It needs, however, to be completely saturated and possessed by it, in order that the soul be definitively saved. Hence a greater presentifier of the racial soul must come, who can do in its domain a work analogous to that which John did for the individuals whom he transformed. Personal life experience is too limited in its resources to fully convert itself, unless the larger reserves that slumber beneath the threshold in the life of the kind or species can be rung up and turned on to advance individual initiative to a higher potential or to bring its inceptions to completeness. The new self-improvement morality must feel itself caught up and borne on as if by a larger

heteronomous power. Self-reform is foetal and old conceptions actually make Jesus an *accoucheur* of John's endeavors, symbolizing the new birth of the individual into the larger life of humanity. This presentification focuses the whole life of man into the transforming personal and universalized here and now. This was typified by John's trope of the baptism of fire, which tests precious metal and resolves all that is worthless to ash, dross or smoke.[5]

Some have conjectured that the great nabi of ethical katharsis or purgation developed a protensive, expectant anxiety as his ministry proceeded, as he came to realize that he could not complete what he had begun, and that he watched the crowds that flocked to him with growing dread lest a fit successor should not appear, realizing that otherwise his work would be doomed to oblivion, and perhaps derision, like that of many mad prophets that these sad times had produced. Again, some who, in the wake of Drews, doubt that Jesus ever lived, have gone so far as to urge that John's prediction was never fulfilled at all, and that no greater than he ever appeared, and tell us that this explains the question, hitherto baffling, why John's ministry was so brief and his design so complete. On this view the earliest and best of those we have been wont to call Jesus' disciples, were really those of John only, and after the latter had been disheartened, discredited, and perhaps imprisoned and slain as an agitator, charged with raising hopes that showed no signs of possible fulfillment in fact, they set to work, perhaps rather deliberately, either with or without collusion, to create a person and give him a career that had he appeared would have been their idea of a realization of John's hopes. On this view, the whole career and life of Jesus were, as it were, made to order, shortly before our gospels took form, to fit John's specifications. Thus with the first appearance of Jesus at His baptism, we leave the solid ground of history and fact and pass over to that of mythopeic or more or less half-conscious creation of a vivid imagination, loftily

[5] This fire-motif, so prominent later in Jesus' eschatology, is not for John the pyrophilic Heraclitic element from which all things arose and into which the cosmos will ultimately be resolved. Nor is water-baptism merely a token of quenching the fire of either God's wrath or of man's lust. The fire-thought here means only a more drastic purification, as of precious metal from dross. Nor have we here an outcrop of the pyrophobic tendency of a keenly awakened sense of sin and guilt as now explained by the new psychology of hell. (C. F. Sparkman: Satan and His Ancestors from a Psychological Standpoint, *Journal of Religious Psychology*, 1912, v. 5, pp. 52-85, 163-194.) Nor is there here any intimation of the scortatory motif of hypereroticism, of which Freudians make fire always and everywhere the infallible symbol.

and pragmatically motivated. Yet others have conceived John as an invention, perhaps to give Jesus a precursor, as His ancestor David had in Samuel. Schleiermacher objected that John's message was a veiled challenge or appeal to Jesus to get him out of prison, and was chagrined that He would or could not do so. Skeptics have often raised the ominous question why, if Jesus was all He claimed to be, He let John die in prison. Following the record, however, it is no wonder, brief though the sketches of him are, that this unique figure fired the imagination, and is still so suggestive of sublime dramatic situations that the figure of the great fore-preacher has ever since attracted and inspired not only the propagators of the religious doctrine everywhere, but has left many a record on the history of art, literature, folk-tale, and even plant-lore.

One day, near the close of his career, possibly on its very last day, among the throng came a Stranger in the prime of life and of such impressive personality that even the aggressive John himself is made to shrink back in awe and at first to refuse to baptize Him, but felt rather impelled himself to be baptized by the hand of One so manifestly his superior. He did at length consent to confer his rite upon this important Visitor, only by way of submission to His command, and after Him perhaps baptized no other. If so, his function here culminated, and his office was at an end. This event marks the advent of Jesus from an obscurity which scholarship may very well despair of penetrating, into the very center of the stage of history. There is almost no authentic knowledge, although tradition and conjecture are even more voluble concerning His antecedents than concerning those of John. John's baptism meant repentance for sins, so how could Jesus take it without the implication that He had been a sinner? Hence many before and since Schrimpf have held that He at this point had not been sinless, and needed and experienced repentance and remission, like others, even though in some different degree, or on a higher plane. This we shall discuss later. Perhaps He came to John late because He had hesitated long. He would naturally want both to see John and to know at first hand the effects of his message and rite, and also His chroniclers must have felt the need of some point of contact with John vital enough to make Jesus his heir. This dilemma was well met. The implication is clearly brought out that Jesus' natural personality was overwhelmingly impressive to John, or else the latter had wondrous discernment of inner character, or rather, both effects are secured along with another one, viz., the exhibition of Jesus in a most tell-

ing attitude of subordination and humility, and at the same time of authority, compelling John to perform the rite despite his remonstrance.

Jesus entered into His part of the ceremony with a sympathetic *Einfühlung,* abandoning Himself to the influence of the moment. To be a good experimental investigator of the work of John, He must become, for the moment at least, his proselyte, and this His genius enabled Him to do, although it had to be to some degree as if by proxy, for how could a soul so pure sound the depths of the experience of the conviction of sin? Just this was, however, perhaps precisely what He wanted and did. It was at this point that His consciousness began the great work of bearing the sins of others in a vicarious way. Even if He had not sinned, He had to know how sin felt at its worst. Perhaps in His own soul here first arose something like the later theological distinction between *posse non peccari* and *non posse peccari.* If so, His baptismal experience was for others' sins, which He was to bear, and of which He perhaps here made inner confession. It also marked in His own soul a crisis such that while before He had been able not to sin, He was henceforth unable to sin, because realizing more fully what sin meant. Or else, perhaps, like Parsifal, who before meeting Gundry had been naïvely innocent, but was afterwards consciously so, Jesus may have here conversely passed over from instinctive to reasoned virtue.

The effect of the baptism on Jesus' own susceptible soul was profound, and marked perhaps the very greatest epoch in His career. He had at any rate heard much of this great soul-purgator, and desired to meet him and feel his spell, perhaps had heard that he proclaimed a greater and wondered who it was, possibly thought He might announce Himself as John was about to retire. When the sacred office of symbolic cleaning was over, and Jesus came up out of the river, His tense, impressionable soul had a vision. For His entranced imagination, surcharged with the vivid imagery of the prophets, the heavens seemed to open, and out of their azure depths something very like a dove appeared to descend upon Him, and along with this optic came also a compelling auditory impression, like the voice of God, saying, "Thou art my own beloved son." The secret and perhaps all unconscious dream wish His soul had nourished now sprang into consciousness, as if it were a veritable realization. Assuming that this occurred to Him, alone and only, *i. e.,* that the dove was entoptic and the voice entaural, He must have imparted this experience in some confidential way and hour to some-

one, and have discussed its reality and meaning. If He had experienced such a critical moment that the tame psychology of the modern toned-down mind calls illusory, it would be neither strange nor even abnormal, for imagination always, and especially in His age and land, made thought far more pictorial than now, and Oriental mentation, too, often works in great throbs and pulses when under great stresses. Whether it was all an objective miracle, an hallucination, a thought or the revival of a long fondly and very secretly cherished wish, the incident has great dramatic validity. The Ebionites thought that at this moment Jesus first became divine; the synoptists thought that He then received the Holy Ghost, perhaps prefigured by John's baptism of fire, and itself prefiguring Pentecost. The most psychological of modern Christologists, however, think it an endopsychic experience which consisted in Jesus receiving His afflatus, inspiration, or being dowered with the enthusiasm of humanity that Renan, or attaining the supernormal or erethic or ecstatic state that Holzmann, makes such a leading trait of Jesus' life and character. On this view from the rapt state into which His higher powers now deployed, He became always thereafter more predisposed toward, and at all moments nearer to, a more or less entranced state, which came to be habitual. In this experience His spirit assumed the erect posture which man's body did long ago, which Jesus' soul did here, erecting Himself above Himself in a way no less epochal for the coming superman.

II. The Temptation.—To meditate in solitude upon the stupendous problem thus sprung upon Him, Jesus felt impelled to retire to the desert, whence John had come, to brood and think it out. Meditation and introversion of soul favored in solitude, as the lives of hermits and anchorites showed, has always been a great resource of great men, not recluses, on supreme occasions when they needed to orient themselves, to find poise after shock, or seek direction from within. When this exercise and discipline is combined with fasting, it tends to give a very peculiar and specific exaltation of mind. When alone, man abstracts from all the constraints of the outer world and frees spontaneity and inner impulsion from inhibitions, and brings a state not without analogies to those that arise in the passivity that the procedure of psychoanalysis cultivates. Perhaps infantile reveries and pubescent daydreams, and vague foregleams that Jesus felt at the time of His temple experience, and such as the mother church still cultivates from the confirmation age on in the retreat, revived and came to the fore, throwing off the shades of the prison-

house or the repressions of maturity with its prosaic realities, which often cause them to grow pale. But now the dual image of the dove and the voice revived the juvenile excelsior passion for supreme excellence in all its pristine force until it seemed indeed realizable. His tender years had been haunted by the Messianic ideals of His age, perhaps most potent in the little circle in which He grew up. These were most uniquely fitted to give just the inspiration that fervid and pietistic youth craves and needs. All these experiences were not only normal but typical in kind, but were without precedent in degree. The Messianic idea was a hovering presence, marvelously calculated to appeal with tremendous energy to the inmost soul of ambitious and gifted young men. It had been Jesus' own most fondly cherished form of idealism, and from His earliest fancies had lain secretly very warm and close about His heart. Its sudden recurrence with vividness in this most exalted moment of His complete manhood and in broad daylight could see nothing else than an apparition of fate. Could He, should He, accept or rather dare He refuse it, and what were all the implications it involved? To accept it meant a life such as no other dared to live, and if He was true to its rôle and lived out the life that His race thought ideal, which prophets had so cherished and which the ancient and ardent hope of His people had made more or less definite and tangible, it meant not only supreme service and glory but certain death in the end. The call seemed indubitable and straight from the all-father of His own soul, and so to refuse it would be cowardice and treason to the Most High. To succeed would be joy and salvation to Himself and all who would accept Him. But the summons was authentically divine and so He could not fail. But stronger and deeper yet came the feeling that it was no rôle but that He was in very truth and fact Yahveh's only son, not by appointment or commission, but in His very inmost nature. He was not merely sent upon this mission and following a prescribed course of life with no outer constraint, but born in very truth the Messiah. In this thought indeed He merely learned His own true identity like the real son of a king reared in ignorance of who he was, yearning for some noble career but finding in maturity that a throne was his by right. Thus in solitude He discovered His real self and inner oracles that could not be gainsaid awoke and spoke. Other mortals galore had thought themselves divine but with no such witness and with no such plenary assurance. Thus the great affirmation was made and sealed. Jesus knew Himself for what He was and accepted Himself as veritable man-God. God did not merely come to conscious-

ness in Him but was His own ipsissimal nouminal self, and what a postulate! God is man and man is God. The transcendant is imminent. Jesus' own individual psychology is the true theology. God had been thought objective but now we have seen Him to be only the inmost subjectivity of man, individual and racial. The divine in nature as father developed the divine in man as son. Man is the only begotten son of the cosmos. Sounding all this profundity of insight, which a few mystics and seers before and since have dimly and partially intuited, Jesus reached that depth, or rather height, of insight beyond which religious psychologizing could not go. Eckerhardt, Boehme, Taule and in more rational ways Kant, Fichte, Schelling, Hegel and others, to say nothing of Oriental seers, have glimpsed aspects of what this epoch-making concept of a theanthropos or an incarnation idea really implied, but none who had thought it ever grasped it so completely and ever dared to live it out or even venture to express the great secret without reservations, for if uttered too plainly, as in a peculiar sense Feuerbach found out, to the world, which has always cried out at and clung to the need of an external God, the seer has been silenced or discredited or burned as heretic or atheist because he had become too God-intoxicated. This was the *aperçu* supreme, above all others, which Jesus here penetrated to with fasting and prayer and alone in the desert (an environment symbolic of the solitude of the soul of all who attain the high altitudes of human experience, where few or none can follow or understand). This was the conviction in which His soul, after we know not what struggle and agony at last found rest, peace and immovable anchorage as on the rock of ages. It was like the discovery of a new continent of faith, or worship at the shrine of a new deity, viz., the Holy Ghost. With this thought amidst these waste places Jesus gradually grew familiar and at home as He communed with His own inmost soul.

But now His thought must turn to the world of other men. What could be done with this great new insight so hard to grasp, so impossible to teach directly? It was far above and vastly too esoteric for the world and perhaps even for a chosen few. To utter it abruptly and entirely would mean summary fiasco and ruination. Not one of all He knew or that He could think of could see or bear it. The faintest intimation that He thought Himself divine would be deemed blasphemy or downright insanity. He knew His world and best of all His immediate family and personal entourage, and how the best type of Hebrew piety would be shocked by any abrupt avowal of His precious and unique insight! He knew how

perilous it is to go too far towards the core of religion, and that all whom He knew stood or might be ranged in varying degrees of remoteness from the great at-one-ment of spirit with the soul of the world that He had achieved, and that His only course was to inaugurate a campaign of education of a new and original type such as befitted the novelty of His teaching, and to be content if He could see in the hearts of those He could draw closest to Himself a progressive approximation to His own most precious newborn insight and conviction. Perhaps His followers would never reach this true and ultimate goal of all religions, which He had attained, but He saw that the degree in which they could be led to do so was measured on a scale of moral and religious values that reached from the nadir of blindness and sin up to a very zenith of true beatific knowledge and holiness. Thus He must probably always teach with reservations and with more or less veiled reticence for to reveal all he had seen would spoil all. Thus he must follow a program or curriculum and must be a great teacher, for if others ever were to attain His state of mind or to get near it, and profit in proportion, it would never be by the method by which He had arrived at it, viz., that of solitude, meditation and prayer, but by objective demonstration. Those whom He approached would demand a sign. They could not be taught His supreme thought directly or at first, but must be shown what He could do which they could not and thus He must arouse their curiosity as to whence His power was derived. A man conscious of His own essential divinity must give proof in object-lesson form of His superiority over others whose souls had not realized their own consubstantiality with God. There was only one possible way in His day and age of documenting the super-humanity, and that was by performing wonders or miracles which were the standard criteria of superior power to control men and the world about us.

Just at this point a doubt arose in His own mind whether He could really do this, and just then, too, the pangs of hunger from His long fasting and absorption in His theme became acute, and a thought so distinct it seemed to Him the very voice of the tempter without seemed to say, "If you are God's son surely you have power to convert something in this wide waste into food rather than to die here like a beast. With all your newfound divinity you cannot make bread out of stones and so you are a fool or insane in deeming yourself divine and perish you surely must if you cannot eat." This

some think was a special popular touchstone of Messianity, and was deemed one of the simplest supernatural acts, as it was only an acceleration of natural processes, and if He could not meet it, not only the people but He Himself might well doubt His call. Yahveh, who had fed the people with manna and quail and later had fed Elijah, refused to feed Him. But the countervalent thought was not long delayed and the reply that formed itself, seemingly quite outside Jesus' soul but really in its unconscious depths, was "I must accept sustenance by the ways nature has already provided. The nourishment I need, famishing though my body is coming to be, is answers to my problems. It is for these solutions that my soul is vastly more hungry than for bread; to solve these problems would be meat and drink indeed, and it is my greater, higher and more insistent hunger that has and still makes me relatively oblivious of nutriment for the flesh and I will not be diverted from my pursuit of the bread of life for the race to mere lust for eating and drinking." Feeding and teaching, eating and learning, appetite and curiosity, satiety and certainty, food and knowledge, digestion and assimilation of knowledge,—these are closely related for genetic psychology, and Jesus' later miracles of feeding are symbols of His work as soul-feeder. Freudians teach that *Wonnesaugen,* or the rapturous condition in which certain nurslings fall, presages ecstatic states later and that the first of each of these experiences may pass into the second, voracity being sublimated into desire for knowledge, etc., while the latter may be converted downwards into the former, as Satan in the first temptation sought to effect in Jesus. A faster, as many experiments, especially since Luciani, show, after the first few days feels no hunger and tends to introverted exaltation, and Jesus' long fast was both effect and cause of a diathesis that predisposed Him to the exaltation that some, as we saw above, regard as so important a trait of His life. The Eastern cult of navel-gazing in quest of Nirvana is a symbol of the fact that with detachment from the outer world always goes regression toward or a revival of juvenile or infantile states, as Jesus here resurrected His earlier reveries till in His state of absorption He became henceforth completely dominated by them, till bodily needs, like ties of family and the *vita sexualis,* etc., paled before the new higher life that was from now on to dominate all. From now on His life had one goal, sole, only and supreme. The ascetic Essene trend in His nature now asserted itself in the complete subjection of body to soul. Thus He here achieves immunity from every sarcous desire. In His

kingdom there must be no place for indulgence of sense. This was the first cardinal delimination and determination of His future life on earth as God-man.

In another day-dream, vivid perhaps to the point of hallucination, he seemed to be on the dizzy pinnacle of the temple and a tempter's voice challenged Him to leap off into space and test Yahveh's fidelity by seeing whether He would suspend Him in mid-air against the laws of gravity. No nightmares are more common or painful than those of hovering and flying and in hypnagogic states we often fancy for some moments, while emerging into full wakefulness, that we can really float or fly, experiences that have various explanations which fall into three general groups, genetic, physiological and symbolic. Yahveh was aloft in the empyrean, above the mountains, and His angel messengers were unaffected by gravity, and when children's fantasy dons the *Tarnkappe,* the power to fly, the weird fascination of which is now seen in birdmen and in those who feel the charm of watching them, is one of the most universal of fascinations and even wishes. As this revery experience phosphoresced up in Jesus' brain, anemic from want of nourishment in the blood that fed it, the all-dominant *aperçu* that possessed His mind, seized upon it as a possible test, but that He thought it diabolically suggested shows that He instinctively regarded it as unfit and absurd. If angels keep Heaven's favorites from stumbling, much more will they sustain from a fatal plunge the son of Yahveh Himself. Nothing was more natural in this pre-scientific age than that Jesus Himself should crave some miracle such as had been vouchsafed to the prophets of old, not only to credit Himself to the world, but far more to give to Him complete self-assurance, especially as He was Himself uncertain whether the dove and the voice were real or only subjective. To leap off would be an immediate appeal for divine intervention, very unlike the slow process of starvation, and His inmost soul yearned for ineluctable certainty. In His eager quest of a yet indubitable sign, He is true to the deepest instinct of humanity, which has always sought plenary certainty by the best tests that the age or race knew. Discretion, however, prevailed over impulse. He realized that gravity could not be suspended to save His life and so came down from the pinnacle and took bread, wiser now by the great lesson that neither animate nor inanimate nature could be changed in His behalf, and that the laws of the physical universe are irreversible. Miracle-mongering, in the sense that these laws can be set aside, is no part of the program of the God-man. From this experience He perhaps acquired the reluctance He

so often shows to do what people thought to be mighty works. From the beginning folk-thought had instinctively associated superhumanity and miracle working, priesthood and thaumatergy, but here according to liberal interpretations we have a new epoch-making stand. As before He had refused to recognize even hunger, save that of the soul, so now all the wonders He can legitimately perform are those in the domain of the soul. Here there are abundant powers waiting to be set free, and this master-psychologist of the kingdom within would work His magic in this domain only. Even all His healing should be psychotherapy alone, and this should be done chiefly as a symbol of a more inner psychic regeneration from the obsession of sin. His followers might not observe this suggestion and the people would clamor for physical wonders, and His closest adherents might be so penetrated with the old conviction that a superman must freely conjure with nature that they would misreport Him, but His conscience must be clear on that score and He would concede nothing to a superstition that He must be a magician to be divine. Thus His plan of life took further form. It was indeed a great temptation that He here faced and definitively put aside, a temptation the church He founded never has been able to entirely escape in either practice or belief. He could use to the uttermost every superior insight and work every miracle possible that was in fact only a natural phenomenon of a higher order, and here His already tried healing powers gave Him assurance that He could produce all the awe and reverence which those greedy to see mighty works as credentials of His divinity would demand. He would and could not seem to even try to make the sun stand still in the Heavens, like Joshua, or develop powers of levitation like Elijah or His transfigured and ascending personality was afterwards said to have done. Moving mountains, save symbolically by faith, opening a path through the sea and really walking on the water, and above all, raising the dead,—these were not in His domain. This was an immense step toward anti-supernaturalism, and placed Him far beyond a mass of current superstitions. Yahveh might still conjure majestically with the cosmos, but He would or could not. It marked a transition from the material to the psychological standpoint. If later Jesus seemed to others, or even to Himself, to control the course of outer events, or to try to do so, it was only in a residual or reversionary way, or else this temptation did not purge away quite all the vestiges of this ancient charm, which had always invested and also tempted priestcraft, and to resist the imputation of which by the people must be unremitting

to be effective. It would not be at all surprising nor any derogation to Jesus' humanity to assume that He did at periods in His life feel this old desire to be thought a magician, but the true Christian must fondly hope that seeming lapses from this standard are more likely to be due to the wonder-loving and sign-seeking recorders than to indicate real infractions of His noble resolve on Jesus' own part. His break with magic, then, was here complete. If popular superstition had fixed on some attestation in the form of a feat of strength within reach of His own power, as perhaps in the case, *e. g.,* of Theseus, Siegfried or King Arthur, He might have conformed, but to this He could not if He would. It was His Canossa and the tempter was like the flatterers of Canute before the rising sea. If He was ever later tempted to forget this, the memory of this desert experience must have murmured deterrently like the daimon of Socrates in His ear. The tempter was thus now unmasked for what he really was. "Thou shalt not seek to mislead one who is divine Lord over thee." He would and could not control clouds, thunder, rain or drought, earthquake or pestilence, though the Father, who called the universe into being, might do so. His field was man and his life and works, and His kingdom was the city of Mansoul. Here He would fight and overcome the adversary and push on even to His own dominion and free His subjects from the might of Diabolus, and then even the physical world would bloom again like a new paradise and the power of evil would be overthrown.

But there was a third and final problem, in some sense the most difficult to face. The people, as we saw, had never been so oppressed in their own land and now since Maccabeus, the ideal of a military leader, who was also high priest and head of the Sanhedrin and perhaps of a new theocracy, was warming up again in the hearts of the populace, although the strength of the Roman yoke and the futility and disaster of revolts had been most impressively taught. Still, were He really divine, perhaps even this emancipation, so yearned for, might be within His reach. With David's blood in His veins He would be no mere pretender to the kingship, and the memory of all that Yahveh had wrought in the past in confounding the enemies of His children suggested that to turn away would be abdication and cowardice. All men lust for power and splendor, and rulers and kings are prone to be drunk with this passion. Ireland has described monarchs who were simply mad with the sense of their might and insanely greedy for more, while since Max Stirner may have depicted the trend in the soul to magnify to the very uttermost the

egoistic instinct, till hyper-individuation becomes not only morbid but may make its victim an enemy of the human race. Jesus' symbolic vision here was a mountain-top so high that from it all the kingdoms of the whole earth could be seen, while the arch enemy whispered in His ear, "As God-man you can rule over all these realms as sole and absolute Lord and not be content to be supreme merely over your own race. To do so your motivation must be self-aggrandizement. You have the gifts if you have the will to reign. You would have to be ruthless, perhaps unpitying, place might above right, splendor and magnificence above inner clarity and richness of psychic life. Revere me as the god of self, and all other things befitting your universal dominion will be yours and you will be the first among all the children of men or demi-gods. You shall not serve but command all. Your throne can be the most exalted, your realm the largest and richest, your dignity the highest, your dynasty the most lasting the world has ever seen. The glories of imperial Rome will fade beside it and still more that of the age of Solomon. World empire is within your grasp and you may realize the wildest dreams of human ambition if you will dedicate yourself to the infernal precept of winning at any price, using any means for your ends, and letting selfishness in you do its perfect work." But this extravaganza, this siren song of egotism with abandon, while it would have more than realized the popular dream of political independence and a temporal kingdom in which so many Hebrew patriots, seers and even fanatics had dedicated their lives, seemed impracticable to the sound common sense of Jesus, for the Roman hold on the country was too strong and the people too weak. All these lower motivations He felt keenly, as is shown by the extreme splendor of the dominion depicted to His imagination, arousing uncensored infantile reveries. How much of His decision was worldly prudence, accepting the inevitable, making the best of a sad necessity, and how much was due to the insights of His religious genius, revealing a wealth of things still better, we do not know. Had temporal power been possible or His vision less, He might have listened to the political and military call. But probably any such program as this made no appeal to Jesus' temperament. He realized that when Hebrew nationality was at its best the people had fallen away from the true faith, and such a grand installation of their dreams would mean a fatal pride that would make them utterly forget Yahveh and His law, and exactly contravene and make nugatory all the teachings and even the spirit of all the prophets. A deeper insight thus impelled Jesus to the very opposite policy. Serve, not rule;

be least, not greatest; last, not first; meek, not proud; poor, not rich; feel sinful, not righteous; weak, not strong; be pure in soul and not merely ceremonially correct; regard God who sees the heart, and not man who sees externals; found the kingdom of God within and not without; let it develop secretly and slowly and not come suddenly with ostentation or by observation, and if need be let its citizens be recruited among Gentiles and even outcasts. If you would see its tokens look into the souls of little children, whose naïveté is rest in God and who are closer to the Divine than are adults. Its corner-stones are laid in the unconscious more than in the conscious nature of man, in the realm of affectivity rather than that of intellect. The simple life with patience and compassion and brotherly love, which is broader and deeper even than the splendid old classic friendship, loyalty and fidelity:— this is the goal and aim.

Thus the mason-carpenter who went to John, eager, yet hesitant, and perhaps persuaded to do so by His friends at the last moment of opportunity, emerged from the desert a new being, conscious and with a complete stoic cataleptic certainty of His identity with God, devoted to the greatest cause ever undertaken by any son of man, with an orientation and an outline of method of procedure, ineluctably self-dedicated to a work vastly greater even than Himself, great as He had so suddenly become, and panoplied as He now was with a few cardinal, if as yet only generic, resolutions, feeling Himself reinforced as if with the whole momentum of creative evolution of the universe behind Him, and borne along on the central tide that ever flows irresistibly on toward the fulfillment of human destiny. Of each alternative He had chosen the highest. He was wiser by abandonments of what would, could and should not be done. His field was narrowed and also greatly enriched by every refusal. He was now face to face with a definite future. If others had been inspired He was now inspiration itself personified. If revelation had been vouchsafed to others, He had achieved it in and of Himself and found it in deeper self-knowledge than anyone had ever attained. He was divine as none before or since had been, because He had become the only complete and perfect man by the realization that man is God and that therefore God is man. In attaining this ultima Thule of self-knowledge He had, as it were, graduated from the school of life, and now He must become the first great and unique teacher in it, and must radically reconstruct its curriculum so as to guide all who were truly docile along the way that He had made to the

truth He had found, and show to others the new world He had discovered. Perhaps the Christianity of the future will fittingly commemorate, as one of the greatest epochs not only in Jesus' career but in all Christendom with its 627 million adherents, this sojourn in and homecoming from the desert fully panoplied for His work. Had He not gone out to meet John, had He refused his baptism of water because He found no need of this symbol of cleansing from sin for Himself, had the vision been withheld and His mentation been less imaginal, had He returned to His brick, mortar, stone and wood-work, this would have been a very different world. Perhaps this and not even the events of passion week were the crisis of the drama. But from now on all moved toward the denouement of the last act as if with fated propulsion.

That something like this really occurred on the stage of Jesus' own soul, if we pass from the brief, bizarre, fragmentary records of the synoptists, which are like a confused manifest or patent content of a dream, which seems rather incoherent and meaningless, back and down to the underlying latent thought content of it all, we must believe because in this deeper stratum below the symbols it is all so coherent, sequential, natural and true to the nature of man's higher psychic life. It must all have been historic in this inward sense, for no man or group of men, not even the great folk-soul, could devise anything with such compelling verisimilitude. We must believe, for the truest faith is belief that all these many items which the religious consciousness has accepted so crassly and literally, although and sometimes actually because they seem absurd and preposterous, have a deeper and essentially real actuality behind and beneath the crude picture-writing of the synoptists in which we shall find, if we can only read their meaning aright, things far too great to be comprehended by those who recorded them, and so, despite their obvious efforts to be sedulously faithful to facts as they had found them, give us really only a distorted, sketchy, and often misleading *Zehrbild account.* If we can do this, we can restore to the gospels their true import and harmony. It is a striking and most happy higher power in the soul of man that, sprinkled as the record is with inconsistencies, and insignificant and perhaps affronting to modern intelligence as some of it is, the race has always been strangely fascinated with it all, as by some weird talisman which seems to consist in a profound sense of value concealed in it, and it is our task to penetrate to these precious happenings, so largely made of soul-stuff, as they really occurred in this man-soul. This in-

deed is the task of the psychology of Christianity now to gird itself to a work not unlike that of late so often and so brilliantly done in other fields, but in this inspired by the new hope that we may really resurrect the Jesus so long buried in the gospels, and then we shall fully realize how vain and fatuous are the current theories of all such scholars as now teach that no such man ever lived, but that His personality was a deliberate invention of the earliest founders of the church, or that Jesus' person was only a new version of a mythic hero of ancient Babylon, or that He was a wretched degenerate, or again, a commonplace man about whom, for reasons which lay outside Himself, a vast body of legendary lore had been gathered. To the newer, more positive view, on the other hand, Jesus was a wondrous flesh and blood man who had the deepest and truest insight into the fundamental problems of life and mind, who solved the greatest of all questions by finding the true relation of identity between man and God, and who achieved by transcendant genius and incredible spiritual labor in the highest field and with devotion unto death a reconstruction of religious faith and practice so significant that it made the chief epoch in history, morals and society, and all this by starting His followers toward the same insight He had achieved. Thus at the same time He is teacher and example and inspirer of each to realize the very best and greatest that is within himself, and to understand all that is implied in the conviction that, as Hegel said, no true man can possibly think too highly of himself. When, on His return from the wilderness, He was waylaid by the sad intelligence that John was cast into prison, He realized all the more that henceforth the work must be His alone and must begin at once.

III. *Choice and Training of Disciples.*—Before following Jesus' public career, it should be noted that the gospels give us for the most part only isolated incidents, often separated by we know not how great intervals of time from each other, and altogether accounting at the most for only a very few score of days, while of most of His ministry the text is silent. There is also the utmost diversity concerning the order of events. Some seem to be repetitions with variations. As to the length of Jesus' ministry, Clement of Alexandria thought it lasted but one year, "the acceptable year of the Lord." Keim and others who adopt this view base it largely on the fact that the synoptics mention only one Passover. The other extreme view is that of Irenaeus, who thought Jesus taught ten years and lived to be at least more than forty (John VIII, 57, makes the Jews say, "Thou art not yet forty years old"). There is a tradition also to this effect, which was long ago

espoused by Delff.[6] Gilbert[7] figures two years and four months between Jesus' baptism and His ascension, of which nearly twelve months was spent in Jerusalem and Judea.[8] He holds that this brief public career was a complete unit, governed by a single purpose which did not change and with no stages of development, an old and well entrenched view but transcended by critical studies, and utterly in the face of the many psychogenetic suggestions from the text. Thus harmonists and critics have always differed hopelessly, and in the sequences here adopted we shall frankly follow in some respects another norm, viz., that of psychological probability based on stages of genetic development.

One of the most deplorable gaps is the deletion of the beginning of the public ministry. We do not know what followed Jesus' return from the temptations and the desert. Some conjecture that He was silent a while, as Paul probably was for years after his conversion, in order to get His bearings, plan His career, and prepare for it. In the three synoptists He first appears in Galilee, after an interval of we know not how long, preaching exactly the same doctrine of repentance and the immanence of the Kingdom that the Baptist had done. Few scholars follow the order of the fourth gospel that He first called disciples, performed the Cana marriage miracle, and then went to Jerusalem and cleansed the temple. If we follow Luke, He did much healing and some preaching very early in His career at Capernaum, and it was during His mission here that we have the tale of His revisitation to the home of His boyhood. Nothing was truer to human nature than that He should be inclined to compare His new, higher life with that of His adolescent stages of fore-feeling, yearning and germination. The tendency of great men often is to keep in closest contact with their youth, although we generally have an earlier stage, where fugue tendencies predominate. Thus the child seems to itself to have outgrown the narrow influences of home and wishes to push into the life of grown-ups, sloughing off the stage of immaturity and moulting its memories:—a trait exemplified in Jesus' temple visit at the age of twelve. Now this tide ebbs. The intolerableness of childish surroundings is past, and it is not wastrels, ne'er-do-wells or failures that yield to this reversion impulse, to which

[6] Die Geschichte des Rabbi Jesus von Nazareth. 1889. p. 251.
[7] Students' life of Jesus. 1896. Ch. 6.
[8] According to this scheme, there were two months from the baptism to the first Passover, eight from the latter to December, four to the next Passover, six to the Feast of Tabernacles, three to that of dedication, three to the resurrection of Lazarus, three weeks to the crucifixion, forty days from the resurrection to the ascension.

Goethe said he owed much that was best in him. Such revivals of the child that is always in us, and constitutes the inmost core of our being, are themselves regenerative. Conformably to this *Anlage,* we have the idyllic scene of Jesus, when His self-realization was near the point of consummation, returning to His boyhood home. The incident is itself an outcrop sufficiently dight with circumstance of the great law of progression by regression, or of the mutual rapport between genius and childish attitudes conserved, and show us how the loftiest ideals of achievement are bound up with and reinforced by reawakening *das ewige Kindliche* in us. Musing about these early haunts in a receptive frame of mind (the very opposite of the strenuous endeavoring of the desert), habit or inclination took Him, on the Sabbath, to His place in the old synagogue, and just as, according to the Jewish custom of that day, He had done in His boyhood, He again stood up to take His turn, and from the scroll-book of Isaiah read: "The spirit of the Lord is upon me, because He hath anointed me to preach the gospel to the poor; He hath sent me to heal the broken-hearted, to preach deliverance to the captives, the recovery of sight to the blind, to set at liberty them that were bruised, to preach the acceptable year of the Lord," and then sat down. As all gazed at Him expectantly, He broke the silence merely to say, "Here today all that I have read is fulfilled to you." Then the hush grew greater. Not only the gracious words, but His personal charm, the magic of His voice, the impressiveness of His person, were enthralling. Then one or more recognized Him as the grown-up boy they had known, son of the carpenter. They slowly understood that He was in a cryptic way posing to them as the One in whom the prophecy He had just read was realized, and it has even been suggested that some may have remembered youthful indiscretions on His part. The spell at least was broken. The impressive Stranger, of whose great success at Capernaum they had probably heard, was discovered as a matured boy of their own disprized community, impressing the natives, affecting a great rôle, if not, indeed, masquerading as the coming Deliverer. Their very town was almost a byword of derision, and the old-time residents had not been unaffected, in this unconscious estimate of themselves, by the proverb that nothing good can come out of Nazareth. Knowing this revulsion of feeling, and anticipating its result, Jesus said in substance, You think because I sprang from your degraded community that I need a great re-creation before I can be your teacher, and perhaps want me to show my therapy you have heard of, and this might restore me to your favor. My cures of the

body, however, are only symbols of those of sin-sick souls, and the latter I chiefly care for, and only this will I offer you for here I am only a teacher. Doubtless He realized, being in this early stage of His career and so more need of sympathy, that want of faith on their part, which was so essential a factor now, would lessen the change of success. Healing, too, required great effort and took virtue out of Him. He was here for rest and for inner edification, and not for mighty works. He certainly realized that no great man is accepted where he grew up and his family were known, but reminds His hearers that of all the poor widows in the great three and a half years' famine, Elijah was sent to only one, and she a Gentile, and that of all the Jewish lepers the great prophet cured only a Syrian, implying that in His own return here He was only conforming to this precedent, and perhaps already implying that if rejected by the Jews, He might turn to the Gentiles. By comparing Himself to Elijah, by intimating that they were poor widows and lepers, the wrath of His hearers flamed forth with blind fury, so that Sabbath and the synagogue were forgotten, and Jesus was seized and rushed to a precipice off the hill, to be thrown down to His death. Here, however, one of His ecstatic spells seems to have come upon Him, so that, partly perhaps by asserting His prodigious strength, and partly by the awe and majesty He inspired, capped, it may be, by an impressive dazed state, the crowd quailed, drew back, and He walked majestically through their midst and took His departure forever from His own home.

Thus with John in prison, Himself celibate, abandoned by the friends and relatives of His youth, and in a peculiar sense homeless, a sense of the need of intimate companions of the new life, to carry on the great cause should anything happen to Him, as had to John, must have arisen and grown strong. This was all the more the case because Jesus felt now so fully that He had a great mission and cause. The selection of a board of disciples as a device of propaganda is no less significant for His theme, plan and race, than Plato's organization of the Academy, Aristotle's of the Lyceum, Zeno's of the Stoa, and Epicurus' of the Garden, the four great schools of antiquity, that persisted with more or less continuity for nearly a millenium. Founders of schools have a doctrine, and wish pupils with a certain gradation from novices to experts. Jesus not only had a doctrine, but, like Pythagoras and his circle, would regulate life in all its details on a new pattern and conformably to His own person, which since His attainment of the theanthropic consciousness was so sacrosanct or twice consecrated, for it was this that constituted the trans-

forming leaven of all: This God-likeness in mind was now the cynosure of all His endeavor. He desired to make the consciousness of others as far as possible like His own. He needed a little band of devoted men, utterly abandoned to Him and to His will, who should combine in themselves very diverse functions. They must be made so far and so fast as possible His own esoteric pupils and companions, whom He could instruct, and with whom He could perhaps try out His methods of exposition for a wider exoteric circle. Simple men of the people they must be, by converse with whom He could learn the difficulties of comprehension that were to be overcome in preaching to the masses. He may have hoped to feel in an intensive way with them the unique stimulus that comes from conversation, dialogue and dialectic, a form often chosen since Plato for the presentation of new truths, although if this was the case He must have been grievously disappointed, save, perhaps, with John, to whom a very persistent tradition reserves this function. He also needed advertisers or pre-announcers of both His advent to new towns in His peripatetic routes, while at the same time in some slight sense they were also, after their novitiate, to be, as John had been, fore-preachers of His gospels. He must have, too, repositories of all He was and stood for, in case He should be imprisoned like John, or otherwise snatched away prematurely by violence, who could preach and organize as Peter seems to have been best fitted to do. He never appears to have foreseen in any way the need of a scholar, systematist and church-founder among the Gentiles such as Paul became, and without whom the whole form and fate of Christianity would have been so very different that it is quite beyond the range of our possible conjecture what Jesus would have thought of Paul, or Paul of Jesus, had each known the other in flesh and blood. Some think they would have confronted each other with mutual aghastness and perhaps repulsion. Jesus seems, too, with Semitic sagacity and despite the unworldliness of His calling, to have felt the need of a business manager or fiscal agent, such as Judas became, although, as in so many lesser enterprises, here the failure of this agent brought eventual disaster. For these coadjutors twelve was a convenient number, besides being hallowed by many associations, and also it meant one for each tribe. He must keep His coadjutors perpetually conscious that their novitiate might end by violence any time, and this would spur them to more insight and independence.

Thus in another rift in the darkness, we see Jesus walking by the inland sea of Galilee, where he espied two brothers,

Simon Peter and Andrew, fishermen. He said: "Follow me and I will make you fishers of men," and on the instant they dropped their nets and obeyed. A little further on, he saw another pair of brothers, mending their nets. These, too, he called, and they straightway left all, and thus the first four disciples were recruited, apparently in a few moments, all, so far as we know, previously strangers to Jesus, and all apparently abandoned their callings with no other motive than Jesus' wish. In this bald narrative all four may have been very young, ready at the faintest suggestion of a passer-by to desert all, as on the sudden eruption of the old migratory instinct, so common in the early nubile age. The form of the narrative rather suggests hypnotization by the magisterial and staccato command which they obeyed without full realization of what they did. Doubtless they had heard of Jesus, perhaps were fascinated by the phrase "fishers of men," for they were illiterate youth of the humblest class and most impressionable. Perhaps the immediate surrender of their lives at a word was the best available test of their quality of docility, and this may have been tried on others before with no such response. Luke, writing later, doubtless felt some of these difficulties, and sought to obviate them in the slowly forming tradition, and so says that Jesus had before stepped into Peter's boat to escape the pressure of the crowds and He taught from it, thus giving token to the multitude and to the first four, before their summons, what manner of man He was. Fishers of men obviously meant captivating masses, as Jesus had just done in a figurative sense by the magic of His discourse, which prepared the way for deepening the effect His call was about to make upon them. As if to crassify still more the idea, Luke makes Him indicate the place where the brothers netted such a draught of fishes that their own boat and that of the second pair of brothers nearly sank. Peter's impulsiveness is shown by the story of the first of various later ambivalent reversals of attitude. He at first hesitated to cast his net where Jesus commanded and then when the nets nearly broke, fell at Jesus' feet as a sinful man. The symbolic nature of this supposed miracle is obvious, but the chroniclers evidently mean to indicate another psychological miracle.

Jesus at first glance knew men and needed that none should testify of them. On first meeting Peter we are told that He saluted him, saying, "Thou art Simon, son of Jonah," as if, as Bengel well says, He had a supernatural acquaintance with a man previously unknown. Thus, too, He surprised the Samaritan woman by telling her how many husbands she had

had. As Nathaniel first appeared, He said, "Behold an Israelite without guile," and when the latter asked with astonishment, "Whence knowest thou me?" He replied that He had seen him under the fig-tree, as if when he thought himself alone he had been caught doing something which was a key to his character. Thus Elijah (2 Kings VI, 8 f) knew telepathically all that the King of Syria said in his private chamber, and also that Jorum had sent out men to kill him. Jesus must never fall short but always excel every analogous achievement in the Old Testament.

The same is true of the responses to His call. When Elijah called Elisha from the plough he left the oxen and ran, yet was allowed to go home and say good-bye. But Jesus does not permit any return, even to bury a father. Such alternations from the humblest to the highest callings, history and story always love to describe and even to create, as many instances that will readily occur to all illustrate. Not one, but at least five of Jesus' companions thus followed Him permanently (not merely accepted an invitation to take a walk, as Paulus urged), so that this miracle is of the coercion of others' wills at a beck or word. His knowledge of character is thus made to seem immediate, clairvoyant and infallible, and thus we see again the all-determining tendency to interpret every possible incident in Jesus' life and words in a way to make it conform to pre-existing Messianic tradition and expectation, and at every step to cap some Old Testament climax.

Of the call of Levi Matthew, the tax-collector, we are only told that at a command he rose from his seat at customs and became the fifth or perhaps sixth disciple (some think the first who had not been a disciple of the Baptist). Whether some or all of these were Jesus' traveling companions during the whole Gallilean period (often divided into three tours), until the twelve were finally sent out, we do not know, nor have we any circumstances of the call of the others in the synoptists. In the seven disciples John names, several not mentioned by them occur. The three agree except that in the place of Lebbeus Thaddaeus, Luke names a second Judas, the brother of James. Simon was renamed Cephas or Peter; a second Simon was called Zelotes; James was renamed Boanerges; there was a second Canaanitic Simon and the two Jameses, one the son of Zebedee and the other of Alphaeus. Peter's name is first in each list and of him we hear most throughout the first three gospels. Of several we know practically nothing. They may have died or been replaced, and Jesus may have been disappointed in them as

He was in Judas. His judgment in making selections may have been more at fault than appears.

It has been asked why Jesus had not chosen Nathaniel, and some think He did and renamed him Bartholomew. He was called an Israelite indeed without guile, had hailed Jesus as Rabbi, Son of God, and King of Israel, a confession both as emphatic, explicit, though perhaps quite as gratefully received by Jesus as was Peter's. It has been said that had he developed into a disciple he might have shown talents of a Pauline order. So Nicodemus, a Pharisee ruler, who came seeking by night, confessing that Jesus came from God, and who was told of the new birth, has been suggested as a better disciple than some of those chosen. The only answer to this is that possibly both these interviews, if stated in their true historic position, came too late after the twelve had already been ordained. Of others who appeared later and have been suggested by various writers as fit for the sacred college, the one most often named by expositors is the Pharisaic lawyer who asked Jesus which was the greatest commandment, and was told that it was to love the Lord with all thy heart, soul, mind and strength, and thy neighbor as thyself, that all the laws of the prophets hang on these. He replied this was true, for such love was more than all the whole burnt offerings and sacrifices. Jesus commended this answer as discreet, and declared that he was not far from the kingdom of God. Another candidate was a rich youth who had kept all the commandments from childhood, but could not on the instant quite bring himself to resign all his great wealth for the poor. Yet another was the eager Zacchaeus, the rich publican, whom Jesus chose in the tree as His host, who gave half his goods to the poor, restored four-fold to those whom he had unwittingly wronged, and to whose house Jesus said salvation had this day come. Only he was a son of Abraham, and not one of the lost whom He now felt it His mission to seek and save. Even Levi, who made a great feast for Jesus, Lazarus, and the "certain Greeks" who would see Jesus, reported by John, have been suggested. The board of disciples, although all but one were Galileans, was composed of men of very diverse types and of some we know nothing, and even their identity is in dispute. One was to be Jesus' Xenophon and another His Plato, or rather, to stand for a Platonic circle to be heard from later. The most unstable of them all was called the rock, the most treacherous was the fiduciary agent. Renan believes Salome, Joanna, Mary Magdalen and Susannah usually sojourned with the disciples and assisted in ministering to and for Jesus. Two or three favor-

ites constituted an inner coterie. All this would suggest great diversity of gifts, views and character, and we should expect that in a group thus composed, there would be jealousies and rivalries, as well as very different degrees of comprehension. Still, they were loyal until the last scene, and His personality over-towered and dominated each and all. Volkmar sought to explain away Judas' treason as a fiction devised sometime after Jesus' death, and intended to motivate the declaration of a vacancy in the apostolic college to make room for Paul and at the same time to create a character that should typify the treason of the Jews against Jesus, a view perhaps more ingenious than plausible. It is, of course, absurd to infer that some of the disciples were nonentities because we know so little about them. They were probably young (Keim thinks their average age not over twenty), chosen early in Jesus' ministry, the best of them coming over to Him from an apprenticeship far longer and closer than His had been, to the Baptist, who some opine chose his followers with a more infallible sagacity than Jesus showed in those He added of His own selection. Realizing the necessity of extending His work by this proxy method, and perhaps planning brief periods of teaching alternating those of learning at His side, after a night of prayer, ordaining them to be His associates, He sent them out to heal and preach, realizing that the harvest was plenteous and the laborers few, and pitying the multitude, who were like sheep without a shepherd. Investing them with His therapeutic power, sending them not to the Gentiles but to Israel, commissioning them to go provisionless, two by two, telling them what to wear, where to enter, when to withdraw with dignity, or with a threat to those who rejected them, He warned them of dangers, told them to be wise, harmless, what to do if persecuted and arrested, told them to proclaim openly what He had taught them esoterically, to be fearless of torture or death, ready to lose in order to find their lives, to love Him more than they did parents or children, assured them that a cup of cold water given a child would have its reward, etc. Meek though their demeanor, their doctrine would not bring peace but a sword, would divide families and test worthiness. The Sermon on the Mount, which some critics think an aggregation of passages from the logia, redacted by Matthew, was a discourse of consecration for their mission. Some hold that John never left Jesus but that Peter was the chief propagandist. If all went there were six circuits, while perhaps Jesus took another. They may have gone forth and returned several times at frequent intervals. Most place the death of John the Baptist

and Jesus' peril of Herod during their absence, and these events doubtless accelerated His activity. Briggs [9] places the Johanine ministry to Jerusalem and Luke's Pyrean ministry here. But the very frame-work of events is uncertain. The disciples surely were with Jesus long enough before they were sent out to be well imbued with His spirits and method.

Why, beside this method of personal promulgation, Jesus never wrote, is a question asked from the earliest days to our own but never fully answered. In His time and place the scribal function was well developed, and it is hard to say why, burdened with a message so important, He should entrust it solely to novices of whose limitations He was often painfully reminded. Particularly toward the last, when His cause seemed waning and their faith faltering, why did He not appeal from the present to the future, from the twelve or even the seventy of His race, to say nothing of the larger Gentile world? To remind us that print was not discovered, writing material costly, a book easily destroyed, the dialect He used limited in range, that deeds were more important than words, as has so often been done, is inadequate. Of course He should not have converted the disciples into a scribal college. Words printed and read are inferior to those spoken and heard. Still, why did He never suggest to anyone the least secretarial function, or why did the making of a record apparently never occur to any of His followers for decades after His death? We surely cannot accept the hypothesis of illiteracy, although even were we driven to this, it should in no degree disparage our estimate of the value of the message, since there is a long line of great men, from Charlemagne down, who were not adept in the mere clerk's trick of writing. Socrates did not write that we know of, perhaps could not, or even read. Especially we must remember that books, while they preserve, devitalize and desiccate words. It is a vastly higher art to put things so they will live from ear to mouth, than to trust them to the long circuit from eye to hand. The scribbling mania, which spawns half-fledged ideas upon the printed page, has caused the world to lose much spontaneous diction, proverbial and apothegmic wisdom, because to say things that will live gives more vitality and momentum than is involved in writing. Of course Jesus might have written, had he lived on to a reminiscent stage of life, but we really have no data for discussion.

Again, if those who knew Him, including His parents, had the least intimation of His deity, why did they not treasure up some of the events, saying or miracles of His early

[9] New light on the life of Jesus. p. 43.

life? The prophetic books as well as the psalms and Pentateuch got themselves written, and now appears one greater and yet we are left to infer that up to thirty He did or said nothing worthy of record, or else that He did so in an environment which contained no writer. That is, if plenary belief in His Messiahship and the ability, or at least the habit, of writing coexisted in any one person near Him, it is strange that simple piety or Jewish patriotism or the love of mankind did not prompt to some kind of record. This is very different from the almost complete absence of any record concerning Jesus by non-believing contemporaries. We shall consider elsewhere the hypotheses that account for the lateness of our authentic records, but neither preoccupation with practical matters, nor the expectation of a speedy return of the Lord with an impending end, are adequate explanations. Love, enthusiasm, the pathos of a shameful death at the apex of His vitality, might suggest at least some threnody *in memoriam* or other vignette by the impulse that always prompts us, when our friends die, to say to our intimates how good, great or dear the lost one was, to console the bereaved by eulogies, etc., so that it would seem that some of these motives, perhaps more Johanine than Pauline, would have evoked a method of keeping the recollection of Him green, and ensuring its transmission from one generation to the next. The youth of the disciples may have obviated, for a time, the sense of any danger of oblivion. Some outline of His life and teaching would have been serviceable as a missionary device among the Gentiles and wherever else the Jesus cause went where its founder was not personally known. When the seventy were sent out, and especially when the apostles scattered after Pentecost to preach to different races, it would seem as though some synopsis would have been necessary. That these motives did not operate is evidenced by such glimpses of reasons for the writing of our gospels as we can divine. One of these was doubtless the fact of the accretion of legends as we see in Luke's resolve to divide between fact and fiction, and the apocryphal gospel shows us what a rank growth the mythic soil had produced. Another motive which prompted the writing of the gospels may have been, as the Tübingen School assert, to wipe out the bitter controversy between the Pauline and the Petrine factions, which these scholars think raged for a long time and almost threatened to wreck the early church, but was finally thus compounded. Both these motives would suggest a plain unvarnished and from the standpoint of the writer a critical

narrative, and a *sic et non* style. So, too, would the impulse to address doubt, skepticism and unbelief most effectively.

The first records may have been the *logoi* or sayings, with the aid of which one or more of our gospels was written, but a biography that is written backward (in the sense that the authors were impelled to write up the early life of Jesus, because Paul had proven that His death and resurrection were so important), must have been very untrustworthy. Indeed, the historic sense of these writers was weak and all genetic insight was absent, and hence they so strongly tend to reverse the order of things, putting the late early and conversely. Most critics think that the Sermon on the Mount was never given as a symmetrical discourse to an audience, as Matthew represents, but it was composed out of scattered utterances. The general effect of it is to spring upon the mind of the reader a type of consciousness which was not developed but which was ready-made from the first, as if evolutionary stages were inconsistent with incarnation theories. Hence the silence about His early manhood, adolescence, childhood, friends, occupations, special experiences, studies, longings, etc. In fact, few great lives, not even that of Buddha or of Socrates, are so utterly void of every genetic hint. For orthodoxy, if Jesus seems to show traces of development, He does so only in a docetic sense. It is exasperating to think of the kind of life that might now be written in these days of mothers' records, photographs, anthropometry, and all the countless measurements and tests, to say nothing of the best methods of modern biography. In fact, from every point of view we have to conclude that if Jesus was in any sense or degree what Christendom believes He was, the synoptic gospels, precious as they are, are wretchedly inadequate. In fact, the greater the man, the more valuable becomes the record of even a simple and Boswellian narrative. A great writer can make the humblest life throb with human interest.[10] Heroes, however, do not need inspiration in those who describe their lives. The plainest, baldest and most uninspired record is in fact the best. Possibly, therefore, we are on the whole rather better off than if Levi, Nathaniel, Philip, Bartholemew or even Peter had left us our best records. The more we realize, however, the stupendous sense in which the child is the father of the man (since childhood is the more generalized type from which maturity involves

[10] One of the most striking examples of this we see in both the lives of the semi-idiotic Kaspar Hauser, who became a psychological problem principally because of his sudden and unprepared appearance at the Nurenberg gate, with no clue of anything previous in his life.

decay), how the very highest object of civilization is to keep mankind young, to prolong infancy, and how in the early stages of life the individual is far more nearly co-extensive with the human race than he is later:—the more we shall understand in what a pregnant sense Jesus, whatever else He be, is the consummate apotheosis and the world's type of adolescence, and the more hungry-hearted we become for the record of the lost stages of His development. Whether psychogenetic studies will ever be able, in any degree, to fill this gap by reconstructive work, antiquarian research, or historical criticism, which have together led to many ingenious restorations in art, literature, architecture, to say nothing of hypothetical stages of ascent in animal evolution, we can hardly conjecture. But one thing is certain, and that is that the more we ponder and discern the faint lineaments and divine possibilities that loom up behind the entire gospel record, the more absorbing becomes the intimations of a life vastly greater than the gospels characterize and their writers could comprehend, the more we feel the poverty and superstition of their minds, and the more we are impelled to the conclusion that this sublimest of all lives has been very unworthily written, so that its insufficiency prompts in us the desire, as strong as if not stronger than any other motive, to rescue it from the inexpressible pathos of undervaluation, by making at least some fragment of it live again in our own hearts, wills and minds as it really was.

BOOK NOTES

Play in education. By Joseph Lee. N. Y., Macmillan Company, 1915. 500 p.

The author's chief aim here is to present a true picture of the child in order to reach certain practical conclusions. The first book is entitled Play Is Growth. It is also serious, trains for life, is related to the hungers, and we are told how advantageous it is to be a play-built animal. As to certain relations of play, those with teaching, gymnastics and work are discussed. Book II treats The Baby Age, and we are told there are four periods of childhood, divided by the ages of three, six, and eleven. The second is the Dramatic, the third the Big Injun Age, and the last the Loyal Age. In the first we have mother play, manipulation, construction, creeping, walking and balancing. In the second or dramatic age, we have impersonation, social play, rhythm, and in the Injun age we have a hunger for reality, skepticism, fighting, chasing, climbing, falling, nurture, sport that is near crime, and a conflict of ideas. As to the mood of play, it is purposeful and in the services of ideals, related to drudgery, means growth from within, and we are told that it is necessary to dream. In the age of loyalty, ending at fourteen, we have the instinct of ownership, the team, gang, land of leal. Then larger units of membership are discussed. There is a special section on girls and loyalty, and on boys and girls. In the apprentice age play compensates for civilization. It is a great restorer.

The practical conduct of play. By Henry S. Curtis. N. Y., Macmillan, 1915. 330 p.

This is intended as a text for those preparing for playground positions, and is a manual for all who have anything to do with the organization of play, even parents and teachers, so the book aims to give definite information and suggestion. It has grown out of the author's long and very rich experience of sixteen years. He treats of the movement in general, getting it started, construction of playgrounds, age, sex, equipment, swimming pools, organizer, training of directors, program, attendance, curriculum, games, festivals, discipline.

Facts in jingles. By Winifred Sackville Stoner, Jr. Indianapolis, Bobbs-Merrill Co. (c. 1915). 306 p.

Here we have an interesting group of poems written by a bright, precocious girl between the age of five and twelve. They are arranged in the order of age, and were written not only by a child but for children. They are by no means a contribution to poetry or literature, but will instruct adults in showing the way the child views everyday situations, and it will also show how very easily a young girl can put facts into jingles. Those who read Mrs. Stoner's "Natural Education" will recall how very early Winifred learned the typewriter, which was such a help to her in spelling, composition, and ease and freedom of thought. Rhyme and rhythm certainly appear to give the youthful mind an effective mode of relating and expressing facts, and it may be that we have in these jingles important suggestions to parents and teachers as to a power not ordinarily used.

Imperial Japanese poems of the Meiji era. Translated from the Japanese by FRANK ALANSON LOMBARD. 93 + 27 p.

These translations from the Japanese, largely in praise of Emperor Meiji, show the loyalty of the people and also the desire of the translator that the personalities of the authors might be better known. They are all written by sovereigns and are very brief, so that it is difficult to reproduce their original structure of thirty-one syllables to the English ear. Rhyme is quite lacking in Japanese, and is generally disregarded as tending to detract from the essential simplicity of the verse. This means that all the poems are thirty-one syllables long. It is an extremely interesting book, by a very devoted Professor of Doshisha and Lecturer in the Imperial University, and is meant as an act of homage and reverence on his part to the royal family.

Selling. By W. A. WATERBURY, WALTER H. COTTINGHAM, and others. Chicago, A. W. Shaw Co., 1913. 196 p.

This work is compendious, treating first the underlying principles of salesmanship in seven sections by as many different authorities, e. g., training for selling, its principles and their application; the salesman as a business builder; science versus empiricism in selling; presenting a business proposition; applied salesmanship and specialty selling; enthusiasm in the work; and written salesmanship. The second part tells us how selling is effected in various lines; how the campaign wins; the falling off of sales; judging the market; selling by mail; the small mail order; how the country department store sells; publicity for the retailer. The third part deals with advantage and importance of system; selling in the store; profitable sales; the automatic follow-up; system in city and country trade.

The work of our hands; a study of occupations for invalids. By HERBERT J. HALL and MERTICE M. C. BUCK. N. Y., Moffat, Yard & Co., 1915. 211 p.

It is hard to get access to this book. There is first a prolix introduction. To reach the table of contents one must begin to cut leaves, and every time the book is opened it cracks in an annoying way.

As to subject-matter, there are two parts. The first treats of workshops in general, hospitals, manual work for patients, sanitorium treatment for people with small means, the teacher and pupil, the trained nurse, the well-to-do-patient at work, the industrial problem of the tubercular, handicapped labor and the law. Part two treats teaching the handicapped, methods, readjustment, organic disorders, hysteria, epilepsy, chorea, border-line cases, work with the aged, etc. The book is valuable and would be a stimulating one for people engaged in that kind of work, but lacks the perspective which is necessary to recommend it to a larger public.

Teaching of history in elementary and secondary schools. By HENRY JOHNSON. N. Y., Macmillan, 1915. 497 p.

The writer first discusses what history is, including methods, early ideas of it, and scientific conceptions; second, the problem of grading it. Then come questions of aims and values, its history in the school, the curriculum in the United States and Europe, the biographical approach, social study, making the past real, use of models, pictures, maps, text-books, selections, collateral reading, correlation of other topics and examinations. The work seems to be a most admirable one, the best known to the writer of this note, indeed, on the topic.

It is a great pity, but the conscientious reviewer must add that the publishers, by leaving untrimmed the front edges of the book, requiring leaf-cutting at the bottom of so many pages, have made its perusal positively irksome.

Readings in American history. By DAVID SAVILLE MUZZEY. Boston, Ginn, 1915. 594 p.

This selected material from primary sources is designed to illustrate and enliven the narrative of the text-book. The author of this collection seeks to give the student a sense of the number and variety of sources that are available, and also he frequently uses two or more extracts to elucidate the same topic. The period he covers is from the discovery of America to twentieth century problems, the Spanish-American War, Roosevelt policies, etc.

A student's history of education. By FRANK PIERREPONT GRAVES. N. Y., Macmillan, 1915. 453 p.

The writer is of the opinion that the history of education has to justify itself, and selections from it must be made with reference to specific needs, that merely historic interests or encyclopedic completeness do not of themselves justify teaching it. So the author has here rewritten his former history of education in three volumes, from a rather new angle, and beginning with the Greeks comes down to present day. An interesting and enlivening new feature of the book is the well chosen illustrations of early days and even of contemporary times, with photographs of a number of modern educators, one of whom only, President Eliot, is still living.

Fundamentals in methods in elementary schools. By JOSEPH KENNEDY. N. Y., Macmillan, 1915. 326 p.

This book is a product of the author's conviction of the poor methods and the lack of genuine efficiency in all elementary schools, both urban and rural. His experience enables him to speak with knowledge, and he wishes his book to be not a consecutive and detailed methodology, but a concretely illustrated discussion to arouse teachers to common-sense injunctions concerning things to be obeyed or avoided. Accordingly, after preliminary discussion of teachers, methods, clear picturing, the chief mistake, the recitation period, he takes up the different topics in considerable detail, including hygiene, morals and even special topics, music, nature, manual training, etc.

Problems in elementary school administration; a constructive study applied to New York City. By FRANK P. BACHMAN. Yonkers-on-Hudson, World Book Co., 1915. 274 p.

The important contemporary problems of elementary schools are here treated by the new method which deals with efficiency and problems of classification, such as those of promotion and non-promotion as related to rate, age, size of class, inability to write English, part time, problems for those who leave school, etc. Such topics as the following are discussed: what children to include in age-grade reports, when and how to take the age to make out the report, age-grade standards, the significance of over age, etc.

Himself; talks with men concerning themselves. By E. B. LOWRY and RICHARD J. LAMBERT. Chicago, Forbes & Co., 1915. 216 p.

This book seeks to state in non-technical terms the things concerning the body that should be known by every adult male, without any attempt

to dictate. The authors seek to describe simply but correctly the general anatomy of the generative organs and their most common diseases. Minute anatomy and rare diseases are omitted, but only those things which interest the majority of young men have been considered. Every man must dictate his own destinies, but he cannot judge his line of action until he knows the facts, and these it is the purpose of this book to supply. It is a judicious and temperate statement in twenty-two sections and speaks very plainly.

School hygiene. By ROBERT A. LYSTER. 2d ed. Baltimore, Warwick & York, n. d. 388 p.

Books upon this subject are multiplying so fast that it is difficult to keep tab on them all, and in them there is a surprising amount of common material. There are, however, differentia in at least perspective. In this handbook we have first a discussion of the school building and the usual lighting, heating and ventilation matter is given. The second part, the scholar, is devoted to physical training and health, posture, exercises, eye, ear, throat, voice, personal hygiene, etc. Part three is on medical supervision and school medicine and surgery. Here the writer discusses the day's work, mental development and defects, common ailments, consumption, accidents, epidemics, closure, and disinfection.

Hiawatha industrial reader. By MARY A. PROUDFOOT. Illustrations by J. Allen St. John. Rand McNally & Co., (c. 1915). 192 p.

This is a unique combination by a very ingenious and successful teacher of children's interests in Indians and in industry, treating first Hiawatha's childhood, wigwam, how Nokomis made the cradle; in his youth his hunting is described, the camp, lodge, sleepy land, punishment, the first deer, the dressing of the hide, which is made the cloak. In his manhood comes his fasting, the summer festival of corn, sailing, canoeing, fishing, wooing, the wedding feast, including the maple sugar camp, the great bowl, making cups, jars, jugs, dancing in the moonlight; and finally blessing the corn-fields, Thanksgiving, making the meal, corn-bread, the harvest of rice.

Interpretation of the printed page. By S. H. CLARK. Chicago, Row, Peterson & Co., (c. 1915). 317 p.

This book is designed for high and normal schools, and especially for the teacher of English without special preparation in vocal expression, so we have chapters on group values, sequence and subordination, denotation, analysis, the central idea, punctuation, connotation and emotion. The author is himself a great master in his own art, with a personality that would ensure the highest success on the stage, had he not preferred an academic career. He is also interested in the higher psychological or philosophical aspect of his art, and is a master in analysis and in teaching.

The child; his thinking, feeling, and doing. By AMY ELIZA TANNER. Chicago, Rand McNally & Co., (c. 1915). 534 p.

All interested in child study will welcome a new edition of this book, which has already had a wide vogue. It is here very largely rewritten, so that nearly one hundred new pages are added, the bibliography is copious, well chosen and brought down to date, a number of new topics are treated, and there are various illustrations, so that on the whole it

must be pronounced, as it ought to be since it is the latest, the best of the various introductions to the subject. The new edition ought to have a still wider use as a text-book than the old has had.

Organization and management of auxiliary classes. By HELEN MACMURCHY. (Department of Education, Ontario, Educational Pamphlets, No. 7, 1915.) L. K. Cameron, 1915. 212 p.

This unpretentious but valuable booklet discusses first the need of auxiliary classes for mental defectives and for the disabled. The history of the movement is then treated, with the Ontario act of 1914. Then come the qualification of training teachers, the auxiliary classroom and its equipment and course of study, cost of such schools, with an appendix of advice to parents, the Ontario act creating these classes, the outline of work, and some sense exercises. The book contains a number of interesting illustrations and simple diagrams illustrating speech defects.

The aims and methods of nature study. By JOHN RENNIE. Third impression. Baltimore, Warwick & York, n. d. 352 p.

This book is practical in that it reckons with the needs of the classroom throughout. After giving certain ideals of nature study and methods, the writer takes up school courses, nature study in the town, color, form and movement, exercises in description, frogs and toads, birds, mammals, shells, snails, insects, the earthworm, fresh-water animals, life in winter, plant identification, a lesson on buttercups, leaves, flowers, fruits and seeds, trees, ferns, decay, common rocks, school gardens, economics, weather study, equipment and management.

School arithmetic. Grammar school book. By FLORIAN CAJORI. N. Y., Macmillan, 1915. 437 p.

School arithmetic. Intermediate book. By FLORIAN CAJORI. N. Y., Macmillan, 1915. 299 p.

As in the author's Primary Arithmetic so in these the aim is to render the subject attractive to the pupil, without sacrifice of serious intent, to encourage self-activity, to get problems that bear on practical life so that the student may feel that his work is worth while. In the Grammar Book the chief feature is the emphasis of vocational problems drawn from the farm, home, carpenter's shop, factory, clerk's office, and a new feature is the treatment of curves representing empirical data such as variations in temperature, stock market, etc.

The future of us boys. Edited in the words of grown ups by a friend. Boston, Babson's Statistical Organization, 1915. 129 p.

This unique book treats first of the boys of yesterday, to-day and the future; why we boys are "no good" to-day; what we need; an ideal system; use of public funds; why not train our parents? The second section is devoted to simple plans to make boys useful, such as the Fitchburg plan; the Boston plan; studying industries; the Gloucester plan; what the fathers might do; what records are needeed. Miscellaneous suggestions follow on the value of example, what is success, need of vocational training, and money.

An introduction to neurology. By C. JUDSON HERRICK. Philadelphia, W. B. Saunders Co., 1915. 355 p.

This is the work of an accomplished and experienced scholar, teacher and investigator. In his 137 illustrations he has given the student an

excellent idea of the general structure of the central nervous system, and his notes put the student abreast of the best authorities to date. The cuts seem not only well chosen but on the whole very well executed for the purpose, and, what is better yet, well devised and clear, so that this book easily takes rank as the first in its field for its purpose.

Practical zoology. By ROBERT W. HEGNER. N. Y., Macmillan, 1915. 495 p.

This is a high school text-book, designed to occupy a year, but with certain chapters that could be eliminated if less time were available. It is called practical because those facts and theories about animals are selected which have the most practical bearing upon the daily life of the student, not only economically but intellectually. The pictures, 325 in all, end with Darwin, Mendel and Pasteur, and are well chosen to develop the child's interest in animal life.

Rural Denmark and its schools. By HAROLD W. FOGHT. N. Y., Macmillan, 1915. 355 p.

Perhaps Denmark has helped us solve some of the problems of the rural school. The country has certainly recently undergone an agricultural rehabilitation, and the author gives a very interesting account of the work of the present rural school there and of national reorganization, with sections on elementary, agricultural and on folk high schools. The book has thirty helpful illustrations.

Economic aspects of the war; neutral rights, belligerent claims, and American commerce in the years 1914-1915. By EDWIN J. CLAPP. New Haven, Yale University Press, 1915. 340 p.

The chief topics here are the rights of neutrals, the August order in council and its effect on the export of foodstuffs, the "Wilhelmina," the blockade, its effects, the starting of the cotton movement and its stopping, copper as lawful commence, also as contraband of war, the export and import situation, the practicability of starving Germany, and war orders.

Muscular movement writing manual. By C. C. LISTER. N. Y., Macmillan, 1915. 114 p.

This little book is written to tell us simply what are the principles upon which successful teaching of hand-writing is based, and to give definite information and direction for teaching. The importance of pedagogical methods is stressed. So is theory. There is a definite plan, and common faults are photo-engraved. Letters are classified as to their fundamental movements, etc.

Kindliche und jugendliche Verbrecher. Von LAURA GERVAI. München, Ernest Reinhardt, 1914. 144 p.

This is a valuable, comprehensive treatise on the crimes of children and youth in general. It contains chapters on suicide, the personality of criminal and wayward children and youth, and the forms, causes and origin of crime. In the end there are copious illustrative incidents given from life.

The kindergarten and the Montessori method; an attempt at synthesis. By MARTHA MACLEAR. Boston, Richard G. Badger, (c. 1915). 114 p.

This little handbook treats the Montessori method, then suggests an adjustment, discusses gifts, hand-work, music, games, stories, and

nature study. The author designs not so much to modify the Montessori system as to utilize its lessons for the kindergarten.

Life problems; studies in the native interests of young men. By L. L. Doggett, William H. Ball, H. M. Burr, William Knowles Cooper. Springfield, Mass., International Committee of Young Men's Christian Associations, 1906. 60 p.

This popular little pamphlet on the native interests of young men discusses problems of a livelihood, social and family relationships, physical temptation and service. It is a book of synopses by several people, revised and edited by President Doggett.

Contemporary French dramatists. By Barrett H. Clark. Cincinnati, Stewart & Kidd Co., 1915. 225 p.

The author gives us here a very interesting study on the French free theatre, with chapters on each of the following: Curel, Brieux, Porto-Riche, Hervieu, Lavedan, Donnay, Rostand, Lemaître, Capus, Bataille, Bernstein, and Flers and Caillavet.

Anarchy or order. Twelve papers for the times. London, Duty & Discipline Movement, 117 Victoria St., 1915. 125 p.

Annual report of the Board of Regents of the Smithsonian Institution . . . for the year ending June 30, 1914. Washington, Govt. Print. Office, 1915. 729 p.

Abraham Lincoln; a story and a play. By Mary Hazelton Wade. Boston, Richard G. Badger, c. 1914. 84 p.

Second part of King Henry IV. Edited by J. H. Lobban. (Granta Shakespeare.) Cambridge, University Press, 1915. 192 p.

Tenth annual report of the education department, State of New York, for the school year ending July 31, 1913. Albany, University of the State of New York, 1914. 1158 p.

National Education Association of the United States. Journal of Proceedings and addresses of the fifty-second annual meeting, held at St. Paul, Minnesota, July 4-11, 1914. Published by the Association, Secretary's office, Ann Arbor, Michigan, 1914. 928 p.

The Tsing Hua Annual. Published by the students, Tsing Hua College. (For the 1915 Panama Exposition.) Vol. 1. Peking, China, August, 1914. Shanghai, Methodist Pub. House. 138 p.

First book in French. By Eugène F. Maloubier and Justin H. Moore. New York, Macmillan Company, 1915. 363 p.

Dictation day by day; a modern speller. Seventh and Eighth Years. By Kate Van Wagenen. New York, Macmillan Co., 1915. 134 p.

Plane trigonometry. By A. M. Harding and J. S. Turner. New York, G. P. Putnam's Sons, 1915. 158 + 51 p.

Bulletin de la Société Autour Du Monde. Jan., 1915. Deuxième Année, No. 1. Boulogne-sur-Seine. 100 p.

University of Chicago. President's report, covering the academic year ending June 30, 1914. Chicago, University of Chicago press, (c. 1915). 237 p.

Massachusetts State Board of Education. 78th annual report, 1913-14. Boston, Wright and Potter Printing Co., 1915. 353 + 164 p.

The new generation; a study in the physiology of inheritance. By Frances Gulick Jewett. Boston, Ginn and Co. (c. 1914). 235 p.

What shall we read to the children? By Clara Whitehill Hunt. Boston, Houghton Mifflin Co., 1915. 156 p.

The survival of the unfit. By Philip Wendell Crannell. New York, Hodder & Stoughton, (c. 1915). 203 p.

The Jews who stood by Washington. By Madison C. Peters. New York, Trow Press, 1915. 35 p.

The socialized recitation. By William T. Whitney. New York, A. S. Barnes Co., 1915. 100 p.

Backward children. By Arthur Holmes. Indianapolis, Bobbs-Merrill Co. (c. 1915). 247 p.

NOTE

At the Johns Hopkins University, the degree of Bachelor of Science in Education has been established in connection with the College Courses for Teachers and the Summer Courses. The degree will be open to men and women. The regulations concerning the work for the new degree will be determined by an Advisory Committee of the Faculty. The title of Director of the College Courses for Teachers and of the Summer Courses has been assigned to Professor Edward F. Buchner.

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$5 per Annum

Vol. XXII No. 1

Single Nos. $1.50

THE PEDAGOGICAL SEMINARY

AN INTERNATIONAL RECORD OF EDUCATIONAL LITERATURE INSTITUTIONS AND PROGRESS

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MARCH, 1915

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WORCESTER, MASS.

FLORENCE CHANDLER, Publisher

AGENTS:

London: K. PAUL, TRENCH, TRÜBNER & Co. *Paris:* F. ALCAN. *Berlin:* MAYER & MÜLLER

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Entered as second class matter at Worcester Post Office

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THE BRANDOW PRINTING COMPANY
ALBANY, N. Y